Amateur Radio

January 1998

Volume 66 No 1

Journal of Wireless Institute of Australia

See inside for the latest amateur radio news, information, and technical articles, including .....

- **A Three-Chip Electronic Morse Keyer**
- **The Clemens Match**
- **A VHF/UHF Signal Generator**

Plus *lots of other articles, opinions and special interest columns*

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Editorial

Editor
Bill Rice VK3ABP*

Production Manager
Bill Roper VK3BR

Senior Technical Editor
Peter Gibson VK3AZL*

Technical Editors
Evan Jarman VK3ANI*
Gil Sones VK3AUI*
Don Graham VK6HK

Contributing Editors
Ron Fisher VK3OM*
Don Jackson VK3DBB*

WIA News Editor
Roger Harrison VK2ZRH

Proof Readers
Allan Doble VK3AMD
Jim Payne VK3AZT
Graham Thornton VK3IY
John Tutton VK3ZC

**Publications Committee member*

Production

Administration, Advertising, Drafting, Production
vk3br Communications Pty Ltd
3 Tamar Court, Mentone VIC 3194

Typesetting and Printing
Industrial Printing and Publishing Pty Ltd
122 Dover Street, Richmond, VIC 3121.

Mail Distribution
Mail Management Australia Pty Ltd
6 Garden Boulevard, Dingley VIC 3172

New Advertising
Eyvonne & Keith Tootell
Union Publicity Service Pty Ltd
PO Box 282, Toongabbie NSW 2146
Telephone: 1800 654 181 – 02 9831 1299
Fax: 02 9831 6161

***Amateur Radio* Correspondence**
All contributions, correspondence, Hamads and queries concerning the content of Amateur Radio should be sent to:
Amateur Radio
vk3br Communications Pty Ltd
3 Tamar Court, Mentone VIC 3194
E-mail: vk3br@c031.aone.net.au
Phone and Fax: 03 9584 8928
Mobile: 0418 534 168
Business Hours: 9.30 am to 3.00 pm weekdays

***Amateur Radio* Delivery**
All correspondence and queries concerning the delivery of *Amateur Radio* should be sent to:
Amateur Radio
WIA Federal Office
PO Box 2175
Caulfield Junction VIC 3161

Registered Office:
3/105 Hawthorn Road
Caulfield North VIC 3161
Telephone: 03 9528 5962
Fax: 03 9523 8191
Business Hours: 9.30 am to 3.00 pm weekdays

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Cover

A team of five WIA members attended the recent IARU Region 3 Conference held in Beijing, capital of China (see details in *WIA News* in the November and December 1997 issues of *Amateur Radio*). The LHS photo shows WIA team leader David Wardlaw VK3ADW (at left) "hamming it up on the Great Wall of China" with ARRL VP Steve Mendelsohn W2ML *(photo by WIA President Neil Penfold VK6NE)*. The other photo *(by Nanette Owen, XYL of IARU VP Michael Owen VK3KI)* is of WIA Education Co-ordinator, Brenda Edmonds VK3KT, sightseeing in Tiananmen Square. Brenda travelled to support the WIA team at her own expense.

BACK ISSUES

Available direct from the WIA Federal Office, only until stocks are exhausted, at $4.00 each (including postage within Australia) to members.

PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus $2.00 for each additional issue in which the article appears).

The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Founded 1910

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Registered Federal office of the WIA:
3/105 Hawthorn Rd, Caulfield North, Vic 3161

All Mail to:
PO Box 2175, Caulfield Junction, VIC 3161
Telephone: 03 9528 5962 Fax: 03 9523 8191

Business Hours: 9.30 am to 3.00 pm on weekdays

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Editor's Comment

Changes in the Wind

Over the past year or so, we have not only received all kinds of advice from members as to how the WIA should be organised, but also how this magazine might be improved. One of the latter suggestions was that editorials like this are not what is required and are in the wrong place. It is even queried as to whether any editorial is necessary.

Much of this advice is very good and deserves to be followed in many cases. From my point of view, being inherently lazy, it would be much simpler not to have to write an editorial every month! This, incidentally, is the 147th "Editor's Comment" which I have written. Prior to Gil Sones introducing a regular editorial in 1983, which I inherited from him in 1984, editorials were irregular and came from various sources. So I feel sure that my 147 is an unchallenged record!

One form the editorial ought to take from time to time, as it once did several times a year, is as a vehicle to tell you, the members, what is being planned or done by the Federal Council. This has been known as the "Federal QSP" but has not been provided for a long time. Part of its function has been taken over by "WIA News", and last month we had a long letter in "Over to You" from the Federal President in response to members' comments or questions. Something like this should be a more regular feature. "Guest Editorials" from notable members are also worth re-considering.

Many other changes to *Amateur Radio* have been suggested, which I do not have space to mention. Suffice to say, that in this issue, the first of a new year, there have been a number of changes. I hope they meet with your approval. You might even be so impressed as to show a non-member what he/she is missing, thus maybe adding to our numbers. More than any other thing, the most effective way of improving amateur radio in Australia is to persuade more amateurs to join the WIA.

Bill Rice VK3ABP
Editor

ar

CONTRIBUTIONS TO *AMATEUR RADIO*

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk or via e-mail are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. A pamphlet, *"How to Write for Amateur Radio"*, is available from vk3br Communications Pty Ltd on receipt of a stamped, self addressed envelope.

■ Comment

Over to You

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Response to Contest Comments

I would appreciate the opportunity to reply to the comments on VHF contests made by Adam Maurer VK3ALM in the December issue of *Amateur Radio*.

Adam asked why there is a rule banning contest activity on calling frequencies if it is not enforced. The answer is that it is not easy for one person to monitor all calling frequencies all the time and hear everything that happens on them - but I will try and do better next time. Nobody has ever sent me a log of stations they may have heard breaking the contest rules.

Adam also said that he is still waiting for the courtesy of a reply to a letter he sent me two years ago. Thanks a lot for your courtesy, Adam. You've had two years to contact me and find out what happened with your letter - but you choose to write to *Amateur Radio* instead. Are you serious, or are you just interested in grandstanding? Send me a letter and I'll reply to it.

I agree totally with Adam's comments on people who "exhibit a total disregard for band plans and peaceful coexistence". I look forward to the day when he acts on this principle and checks the two metre band plan. It would be a step forward for peaceful coexistence if there were one less station running FM in the 2 m SSB segment.

John Martin VK3KWA
C/o PO Box 2175
Caulfield Junction VIC 3161
ar

■ WIA News

Roger Harrison VK2ZRH, Federal Media Liaison Officer

Amateurs Breathe Sigh of Relief as WRC-97 Ends

Early reports, following the end of the 1997 World Radio Conference (WRC-97) in Geneva, indicate that the Amateur Service has pulled through largely unaffected, despite moves by the emerging "Little LEO" satellite industry to share amateur VHF-UHF bands. Little LEOs are a class of small satellites in low-Earth orbit, designed to provide non-voice mobile communications services.

However, resolutions agreed at WRC-97 set the scene for a further hunt for spectrum by the Little LEO industry in preparation for WRC-99. The 1999 World Radio Conference will also decide where frequencies for the Earth Exploration Satellite Service (EESS) synthetic aperture radars (SARs) will be placed in the 420-470 MHz range. These radars are to be used for mapping the Earth's surface, and this frequency range is said to be able to penetrate rainforest and highlight other features.

The existing secondary EESS allocation at 1215-1300 MHz has been upgraded to primary (Australian amateurs share 1240-1300 MHz on a secondary basis with radiolocation). This move, it is understood, will have only minimal impact on amateur operations and reduces the likelihood that other, less-compatible services might be introduced to the band, as has happened at 2300-2450 MHz in Australia.

Amateur satellite segments escaped being ravaged by allocations for wind profiler radars. Only one world-wide primary allocation was made, at 1270-1295 MHz. This does not impact amateur satellite or weak signal segments on the 13 cm band. Wind profiler radars are located adjacent to airports and other aircraft landing fields. They 'fire' vertically to provide warning of certain dangerous wind conditions. Horizontal propagation is severely restricted to obviate interference to other users beyond the immediate vicinity of their location.

A significant win for the Amateur Service at WRC-97 was the passing of a resolution encouraging countries' regulatory administrations to facilitate the use of amateur radio and other "decentralised means of communications" for disaster mitigation and relief operations. This resolution eliminated the need for the previous 'Resolution 640', which defined how certain specific amateur bands could be used for international disaster communications by non-amateur stations. So now, Resolution 640 is no longer in effect.

More European and other Region 1 countries will be heard on 160 m in future following the deletion of footnoted exceptions to the international table of frequency allocations in the 1810-1830 kHz range. Region 3 escaped new restrictions to some amateur bands when Korea was persuaded to drop its move to have exceptions footnoted in the

allocations table for this region which would have affected a number of bands.

Consideration of the definition and qualification for the Amateur Service, Article S25 of the International Radio Regulations, has been postponed from the agenda of WRC-99 to be placed on the preliminary agenda for WRC-2001. Article S25 concerns the definition of the amateur and amateur-satellite services and the necessary qualifications required for licensing, including the Morse code requirement for operation on bands below 30 MHz.

Likewise, the proposal to 'harmonise' the 7 MHz amateur band to provide a world-wide, common 300 kHz segment has also been postponed to the preliminary agenda for WRC-2001.

A total of 1801 delegates from 142 countries attended WRC-97, which was chaired by Roger Smith from the Australian Communications Authority. The WIA's representative on the Australian delegation was Dr David Wardlaw VK3ADW. International Amateur Radio Union Vice President, Michael Owen VK3KI, participated with a multinational team attending for the IARU. Thanks to the ARRL Letter of 26 November, 1997.

[Released 1/12/97]

Spectrum Hunters Target 70 cm

The 70 cm band is being eyed-off by the Radio Site Owners and Users Association (RSOUA), a lobbying body of 23-24 Australian organisations which run land mobile VHF-UHF sites and trunked radio networks.

The RSOUA's interest in 70 cm was sparked by a recent paper on trunked radio systems, produced by a working party of the Radiocommunications Consultative Council (RCC), which represents radio frequency users' interests to the Australian Communications Authority (ACA). The paper canvassed the likely demands for new spectrum at 1.8 GHz, 800 MHz and 900 MHz, as well as the 380-400 MHz and 420-450 MHz bands.

The RSOUA's November newsletter suggested that members who believed the 380-400 MHz and 420-450 MHz bands *"may get the go-ahead from its present users and the ACA,"* for spectrum licensing should launch a major lobbying effort.

"Most of these bands are used by the Defence Department (DoD), which is known to be a tenacious holder," the newsletter said, adding that some is held for CB and amateur radio use. While they were off the mark with CB, which has 476-477 MHz, amateurs share 420-450 MHz with radiolocation as the prime service, largely used by defence. However, 420-430 and 440-450 MHz also have fixed and mobile as secondary services, again, licensed by the defence forces.

The RSOUA newsletter noted that, *"Amateurs maintain very effective lobbying. They recently gained a reduction in fees shortly after new fee structures were mooted,"* giving clear recognition to the WIA's licence fee campaign effectiveness.

The WIA's ACA Liaison Team has moved to seek out background information from the RCC, and other sources, and to canvass likely support from the Department of Defence, the major licensee with whom we share 420-450 MHz.

More news of developments will be published as information comes to hand.

[Released 29/11/97]

Wealth of Information for 10 m, VHF and Packet Enthusiasts

The 1998 *Australian Radiocommunications Reference Guide and Radio Amateurs' Call Book* contains a wealth of information for those interested in 10 m, VHF and packet radio, never before published in one place.

Between the bright yellow covers, 10 m-band stalwarts will find all 170 of the world's 10 m band beacons listed in frequency order. Their locations are tabulated, along with the grid square locator, where known, along with mode, power and antenna details. There are also 186 10 m repeaters listed, by country and frequency.

For 6 m-band fans, the world's 150 known beacons are listed, in frequency order, along with location, grid square locator and modulation mode.

As solar cycle 23 is on the rise, and there's already some action happening on these exciting two bands, the 1998 *Radiocommunications Reference Guide and Call Book* is a 'must have' publication for the shack.

Also listed for the first time are details of the 39 New Zealand VHF-UHF beacons. Way down the other end of the spectrum, if you're becoming interested in the Low Frequencies, there are more than 300 LF beacons between 200 and 400 kHz listed, located around Australia and New Zealand. This will help you get cracking on that LF converter to see what you can hear.

For the packet enthusiast beginner or 'old hand' – there's a wealth of useful data and other material. For those just looking into amateur packet radio for the first time, there's a useful guide to how to get started. If you've been on packet a while, packet 'wormholes' are explained. And for all and sundry interested in amateur packet radio, there's a full directory of all 236 known packet radio system stations throughout Australia.

Priced at $14.95, or $13 to WIA members, the 158-page 1998 *Australian Radiocommunications Reference Guide and Radio Amateurs' Call Book* is available through your local WIA Division, or Dick Smith stores.

[Released 1/12/97]

A Taswegian Wins October's Multimeter

Tasmanian Division new recruit, **Mr R W McCulloch VK7MGW** of Burnie in the island state's north west, has won the Fluke 12B digital multimeter in the October prize draw.

Every month throughout 1997, there was a draw from among new WIA recruits joining each month. December was the last chance to join the WIA and go in the monthly draw to win a Fluke 12B digital multimeter.

The 12 prizes for the year have been generously donated by Philips Test & Measurement. Fluke is the world's pre-eminent manufacturer of digital test instruments.

The Fluke 12B, worth $195, measures AC and DC voltage (with auto-selection above 4.5 V), resistance, and capacitance from 1000 pF to 1000 µF. The instrument features a simple rotary dial, a 4000-count liquid crystal display, and diode and continuity testing. Its "continuity capture" feature indicates intermittent open and short circuits. It comes with test leads and a two-year warranty.

Membership recruitment advertisements appeared in each issue of *Amateur Radio* magazine, and in *Radio and Communications* magazine throughout 1997. Membership recruitment and renewal advertisements also appeared on WIA Divisions' World Wide Web pages on the Internet.

Christmas-New Year Break For WIA Federal Secretariat

The Melbourne secretariat of WIA Federal closed for the Christmas-New Year break on Friday, 19 December 1997 and will re-open on Monday, 19 January 1998.

The WIA Exam Service advised that amateur examination papers for marking which were received in Melbourne by Monday, 8 December were posted to candidates before Christmas.

Any exam material, or orders, received from invigilators after 8 December cannot be dealt with until after Monday, 19 January 1998, unfortunately.

[Released 18/11/97, updated 1/12/97]

AX for Australia Day

In celebration of Australia Day, all Australian amateurs can substitute the 'AX' prefix for VK during the 48 hours (local time in each State) of the Australia Day weekend of 24-25 January 1998.

Use of the AX prefix is optional. The decision is up to each amateur.

This concession for the use of the special event AX prefix was first granted in 1997, following a successful submission to the then regulators in late 1996, the Spectrum management Agency, now part of the Australian Communications Authority.

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NEW HAND-HELD TRIBAND COMING SOON.

The goodies keep coming! Watch out for Icom's new IC-T8A Triband transceiver (2m, 6m,70cm). If you liked the IC-T7A or the IC-Delta 1A then you will love this new unit and its price!

WYONG HAMFEST COMING UP SOON.

Always a well attended event, the Wyong Hamfest promises to be a must-see in '98, It's on again in late February, final date to be confirmed so watch this column.

"...73"

FreeCall 1800 338 915

290 -294 Albert Street
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Tel : (03) 9387 0666
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■ News

WIA Divisions

Forward Bias - VK1 Notes

WICEN Leads to Sleep Loss

A shorter column this month as, like many of our local amateurs, I am suffering WICEN/Rally induced sleep depravation.

The WICEN exercise that was held this weekend (29 – 30 November), in conjunction with the FAI Rally of Canberra, was an unqualified success. My heartfelt thanks go to all those who participated, in some cases at short notice, and braved early mornings, hot weather, dust and smoke over the weekend.

I'd also like to acknowledge the efforts of Paul Tams VK2CJ, Simon Trotter VK1AUS and Phil Longworth VK1ZPL in organising so much of the logistics and personnel. The efforts of Bernie VK1KIP, Scott VK1HAM and Maria VK1TBA at headquarters are likewise appreciated. It was a pleasure to work with everyone involved.

I had the opportunity to speak with a couple of the officials who attended the rally in the role of observers. Their comments were very positive and they rated WICEN's efforts as amongst the best in the world. These officials travel to events the world over and such a rating attests to the high level of professionalism amongst our local operators.

It was pleasing to speak to a number of competitors after the event and catch their enthusiasm for a sport that they enjoy just as much as we do our hobby. They, too, are thankful for the efforts of all those who assist and are quick to acknowledge they could not participate in the sport without those same volunteers. WICEN and amateur radio operators in general are well known and highly thought of by those that compete and who appreciate the contribution we make to the pursuit of their sport.

Coming Events

The January meeting will be held on the 19th of the month to clear Australia day. Our AGM will be held on 23 February and there's still time to nominate for a role on the committee should you so wish. We'll have refreshments and a chance for a chat at both; look forward to seeing you there!

Hugh Blemings VK1YYZ

VK2 Notes

New Year and New Resolutions

I guess you will be saying how predictable to be starting off the VK2 Notes for January with this title, but it is important that we set our goals for the next 12 months. The current board of directors has been very busy over the past year and will continue to do so in 1998 in the interest of the members of the WIA. We wish you all the very best for a prosperous and healthy 1998.

What Do You Have Planned For This Year?

Well, blow me down, I can almost hear the 'I Dunnos', the 'I will try to survives' and 'the Doers'. Mixed bunch, of course, but they say it takes variety to make everything work. It has always interested me how many people enjoy the hobby of amateur radio, but never quite have enough time or the opportunity to give back to the hobby. I trust that this year, however little or large, that you continue to do your bit for amateur radio.

My resolutions this year were for more time with my wife and four-year-old darling daughter, peace, plenty of time to read and listen to serious music, in about that order. But what about ham radio? Well, that comes in many forms. I love DXing and CW and doing my bit for the WIA and the occasional rag-chew, but what I like most about ham radio is the feeling that comes of being with people of like mind and knowing that, in years to come, I will have those people of like mind to share my hobby. It is very important to me.

Only trouble is that we are all getting older. Who is going to take over our spots in the shack when we go? My answer is young people. Yes, it is very important that we move now, right now, to show to the younger generation that the hobby of communication is full of things like satellites, computers, digital transmissions and, most of all, people who share a common goal, that of experimentation. Along with all the other Divisions, the VK2 mob realises that education and assistance are the keys.

This year we will be working to encourage the growth of amateur radio and the membership of the WIA. We will be helping the younger generation with our brand new courses designed to introduce people to the theory and practice of the hobby and help them to pass their examinations in order to enable them to get their tickets. My hope is that you, too, wherever you are in VK, will be doing the same.

Just a reminder that the VK2 Division, in conjunction with Graeme Scott VK2KE, now have a new Novice Course available, along with a bridging course to the AOCP. Enquire at the Divisional office at Parramatta.

If there is anything you think we should be doing for you as Divisional representatives, please let us know. We would be only too happy to consider your thoughts and ideas; after all, you are the members we are to serve.

Affiliated Clubs Conference

The Affiliated Clubs Conference of the VK2 Division was held on Saturday, 15 November 1997 with an excellent attendance from all areas of the state. The delegates appeared to enjoy themselves and many positive issues of importance to amateur radio in VK2 were discussed. Most of all it was very good to see that, for this conference, the number of clubs sending delegates had increased, which shows a healthy interest. We even signed up a couple of new members on the day. Thank you all for attending. In future issues of *Amateur Radio* we will look at some of the things discussed.

VK2 Divisional Office Re-opens Soon

The Divisional office of the VK2 Division at Parramatta will re-open on Monday, 12 January 1998. The Sunday broadcasts will recommence on Sunday, 11 January 1998. So, see you soon.

E-mail Address

If you are addressing e-mail to the office, please do so at *vk2wi@ozemail.com.au*.

If you would like to contact the VK2 Division regarding your hobby, please do not hesitate to contact the office or any of the Councillors. We will be only too pleased to hear from you. If you would like to get in touch with an individual Councillor, just contact our Divisional office and it will be arranged. Our freecall phone number is 1 800 817 644 and our address can be found on the WIA Divisions' page.

Next month

Next month we'll have more to report but, if you have anything you would like us to include as VK2 news, send it to me at PO Box 82, Springwood NSW 2777 or by e-mail to *dthom@penrithcity.nsw.gov.au*

David Thompson VK2NH

VK6 Notes

Council Meeting

The main event for January will be the monthly meeting on the third Tuesday which will take the form of watching the Council in action and having the chance to interact with it. This could be an interesting Council meeting as it will be leading up to considering matters for the Federal Annual General

meeting on 28 March (please note: agenda items for the Federal AGM will have to be forwarded before the end of February!).

By January we should also know the result of a postal ballot on a motion which has been submitted by the WA Division seeking a clear process for nominations for key positions such as President, Directors, Auditor and Federal co-ordinators. This process is aimed at having names and statements about the candidates in the hands of Divisions well before the AGM rather than having names appear at the meeting itself. This will be a more informed and democratic process.

From the Minutes

Minutes of General Meeting 18th November, 1997

The meeting commenced at 2000 with a presentation by Rod Green VK6KRG on the subject of Printed Circuit Board Manufacture. The meeting proper commenced at 2030 with the President, Wal 6KZ calling for a period of silence in memory of Mal Saw VK6SM, now a Silent Key. Visitor Michael DL2OBO (VK6BPT) was welcomed to the meeting.

October Minutes

1. Considerable discussion ensued about the Hamfest. VK6NE suggested that Council write to the NCRG with suggestions for changes next year, which included a better position for the WIA and possibly some means of identifying those who attended, such as a visitor book and/or making available simple self-prepared name tags. *(Action: Council)*

2. Wal VK6KZ reported that comments on the Federal Budget had been forwarded but no response had been received.

3. The future of monthly meetings is still under consideration.

November Council Meeting Minutes

1. The Secretary advised that 50 survey forms had been returned so far.

2. Don VK6HK spoke about concern that the ACA's proposal for EMR sticker approval for all handheld equipment could be a threat to the traditional right of licensed amateurs to build and modify their own gear.

3. Wal VK6KZ referred to the proposal to hold a Conference of Clubs early in 1998. Views on this proposal were being sought from 27 VK6 clubs that had been identified.

4. Will VK6UU advised that the ACA regulations were available on the Internet, but not in full from the local ACA office. Will pointed out that some of the material was not accurate and out of date, and suggested that the WIA should lodge a complaint with the ACA about this misleading material. *(Action: Council)*

Broadcast

Wal VK6KZ confirmed that Tony VK6TS is to enter hospital this week and that Mel VK6TVA would continue to act as Broadcast Officer. Thanks were recorded to Mel.

WICEN

Jim VK6JP reported that communications for Rally Australia were successful; also that the WICEN meeting venue would no longer be available from December as SES were upgrading security.

Morse Training

Barry VK6AF reported that the manual Morse sessions on 80 and 2 m on Tuesday evenings were continuing and appeared well received.

WARG

Will VK6UU advised that from 30 November the 6800 repeater at Tic Hill would require a 123 Hz CTCSS tone for access. This was an attempt to overcome false triggering of the repeater and to educate users to the probability that all repeaters may eventually have to have this facility due to rising interference levels.

WAADCA

Gwynne VK6JG advised that VK6DLX was at present out of service due to a change of location of the service provider.

Technical Training

Gwynne VK6JG outlined his initiative in setting up a Technical Training Course for 1998. The course will be held at Tresillian Centre in Nedlands on Mondays, 7.30-9.30 pm and will run for 30 weeks. It will be practically oriented and will take students to the Unrestricted Theory level. Interested parties should contact Gwynne on 9386 2542, e-mail at *brockis@cygnus.uwa.edu.au* or packet at VK6JG@VK6BBR. The cost will be $15-$18 to become a member of Tresillian and $60 course fee. A text is not mandatory, but a suitable reference is available from the RSGB for about $30.

A Bit of Fun!

VHF-UHF activity should be at a high level with the Ross Hull Contest being underway during the month of January.

The 10 m FM repeaters will also really be on song. The signal strengths on this band are astonishing. Even now as I write at the end of November, I have been enjoying many contacts via Brisbane, 29.660 Rx/29.560 Tx and, especially well received here in WA, the Darwin repeater on 29.680 Rx/29.580 Tx. Propagation has been best between about 11.00 am and 3.30 pm local.

New 2 m Beacon

A new 144 MHz beacon has commenced service from Esperance in Western Australia. Details are: Callsign, VK6REP; Ident

TIME TO DEFEND YOUR BANDS AND HARD-WON PRIVILEGES

420-450 MHz is wanted by Australian commercial interests

RF emission regulations threaten handhelds, mobile rigs, and suburban home stations, with bureaucratic limits

More of **7 MHz** is wanted by global broadcasters

RENEW YOUR MEMBERSHIP RECRUIT NEW MEMBERS

WIA action has: ■ cut the cost of licence fees, ■ cut fees on beacons and repeaters, ■ improved licence conditions, ■ retained access to 50 MHz and 576 MHz; and more.

The WIA maintains representation at World Radio Conferences, and at home, to the ACA and on the Radio Communications Consultative Council. **Strength in numbers. Subs help pay.**

WIRELESS INSTITUTE OF AUSTRALIA

YOUR HOBBY YOUR VOICE

"VK6REP PF06 <10 sec key down>"; Mode, FSK key down HF, key up LF with about 800 Hz shift, frequency (key down) 144.568 MHz; Tx Power, 15 W; antenna, dipole with radiation E-W; and operation, continuous.

The beacon has been received in Perth on several occasions. It is expected that the transmission will provide another point of reference in the continuing investigation of the propagation across the Great Australian Bight.

The beacon is a joint project by Bill Hockley VK6AS and the West Australian VHF Group. Any reports to Bill VK6AS at Esperance. *[Thanks to Don VK6HK for this info.]*

CTCSS on Amateur Repeaters?

[from Chris VK6KCH]

The Repeater Group (WARG) is seriously considering introducing CTCSS decode facilities to its repeaters, especially those on 2 m. This is in response to the growing problem of interference bringing the repeater's transmitters on throughout the day, thus making prolonged monitoring of the repeater a test of patience!

Before you complain, do you know what CTCSS is? It stands for Continuous Tone Coded Squelch System, and it is pretty simple. It involves mixing a continuous low-level, low-frequency audio tone (between 67.0 Hz and 250.3 Hz) onto your transmitter's modulator, along with the normal modulation. At the remote repeater site, a CTCSS decoder detects the presence of such a tone on the incoming audio, and concludes that what it is hearing is a valid signal, not interference, and should therefore be retransmitted.

That's it! No magic, no computers or secret codes. Just a tone.

Will VK6UU has described how to build a simple CTCSS encoder in previous issues of *Amateur Radio*. The most basic design uses two transistors and cost about $2. Better designs are crystal locked, hence giving superior frequency stability over an RC-based design (typical tolerances are +/- 0.5% of nominal frequency). Commercial off-the-shelf encoders are about $40 to buy, and full encoder/decoders are about $80.

I made a few quick enquiries as to add-on option boards for amateur products, and they seem to consistently come in at $100, giving encode and decode which is nicely integrated to the amateur rig. Whichever way you look at it, it is probably an over-reaction to throw your old rig out!

WARG being a crafty mob, it is unlikely that CTCSS will be implemented on the 'normal' commercial lines anyway ('normal' meaning that if you don't have the right tone on your transmission, you don't get to use the repeater!). Instead, WARG is looking at innovative ways that will continue to allow old non-CTCSS equipment to access the repeater, whilst still reducing the incidence of false-triggering from interference sources.

Would you like help in adding CTCSS to your existing rig? Drop in on WARG's weekly on-air meeting on 146.750 Lesmurdie, at 10.30 am, each Sunday.

DX on 29 MHz Gateway

Perth stations continue to have fun working stations via the 29.120 MHz gateway on the Lesmurdie repeater (146.750). VK2, VK4 and even VK6MM/M across the Nullarbor have been worked. At the moment, stations on 10 m only need to come up on FM on 29.120 (no need for CTCSS). Stations on 2 m need to have an 88.5 Hz CTCSS tone on their transmission to cause the 29 MHz transmitter to key up. If you've got CTCSS, why not set your rig to run 88.5 Hz as default on 146.750, thus allowing DX stations to hear your transmission?

One word of caution! Novices and Limited Novices are not allowed on FM on 29.120, hence they are prohibited from encoding the 88.5 Hz tone on to their signal. So don't!

Contact Info

If you have anything coming up that you wish to put the word out on, please contact Chris on e-mail at *vk6kch@amsat.org* ; packet at VK6KCH@VK6BBR.#PER.#WA.AUS.OC ; or me, Chris Lowe VK6BIK (when I get back from my Scotland jaunt in February) on e-mail at *chrismor@avon.net.au* ; or PO Box 838 Toodyay, WA 6566; or 08 9574 4060.

Chris Lowe VK6BIK

"QRM" News from the Tasmanian Division

Divisional AGM Confirmed to be in Launceston

The Divisional Council, at its regular quarterly meeting, confirmed that the 1998 Divisional Annual General Meeting will be held in Launceston. The venue will be the northern campus of the University of Tasmania at Newnham and the date is Saturday, 21 March. The Northern Branch has been arranging this and already interest is building up to this event. So please, mark your calendars and plan to be there.

There will be trade displays and a home brew competition, as well as other activities in the pipeline before and after the AGM, including some for the ladies in the afternoon.

In the evening, the Northern Branch will host an Annual Dinner, an institution that, unfortunately, had lapsed. Again the venue will be the University campus, in the bistro. It will be a buffet meal, and Divisional Council is planning to have a prominent guest speaker. There will be entertainment during the evening, one of the performers also being a ham.

So come along and join your fellow hams for a great weekend.

Contact the Northern Branch at PO Box 275, Launceston to book in for the Dinner ASAP.

November Council Meeting in Launceston

Divisional Council met on 22 November in Launceston's "Original Pizza Pub". In attendance were VK7RN, VK7BE, VK7FB, VK7RH, VK7ZAX and VK7ZDJ. Apologies were received from VK7GL and VK7JK. Observing the meeting was VK7TIM from the North; and VK7AN also popped in to brief Council on AGM arrangements.

Council will be promoting the WIA by circulating all the hams in VK7. It was decided that a repeater fund will be established and respondents will be asked to nominate the repeaters to which they wish to give donations. Membership badges are currently being sought from various suppliers. An announcement on how these can be obtained will be made via the broadcast; they also can be ordered from your branch secretary.

A suggestion was made to reinstate the broadcast roster so that VK7WI could be originated from the North, South and Northwest. The idea would be to have monthly rotations. However, as there are minor complications holding this up, discussion was held over to the next meeting.

Northern Repeaters May Permanently Close!

The November monthly meeting of the Northern Branch decided that, if funding for the two branch repeaters was not forthcoming, they would be permanently closed down.

The two repeaters are on separate sites and give good coverage over the northern half of Tasmania. VK7RAA on Mount Barrow is in need of an overhaul of its antennas. The recent imposition of annual site fees by Air Services Australia of $633, and a diminishing cash flow, has forced the Branch to issue this ultimatum to users of both VK7RAA and VK7RAB. Already the Branch has appealed to Divisional Council for assistance. This will be further considered at this month's Council meeting.

In the meantime, repeater users are invited to contribute to the continuing operation of VK7RAA/VK7RAB. Already we have

received some donations; so, if you want to see these repeaters continue, please forward your donations to the Treasurer, Northern Branch, PO Box 275, Launceston TAS 7250. All donations will be acknowledged.

Ben Lomond An Ideal Repeater Location?

Ben Lomond, which is just south of Mount Barrow and about 1,000 feet higher, has long been suggested as a possible repeater location. It is also a popular winter ski field.

At present there is a very temporary CB repeater close by. However, this is primarily for the use of search and rescue, and CB use is secondary. Some hams have longingly looked at Ben Lomond as a possible repeater site, yet there are complications, which seem insurmountable, to the installation of a repeater. One, it is a National Park; two, there is no hydropower on site; and three, is the question of access.

If you have ever travelled up Jacob's Ladder, especially in winter using four wheel drive in chains, you will know what I mean. Solar power also seems out as it is very cold there and Old Ben is often obscured in cloud. It therefore does not seem practicable, although wind power is a possibility. However, the cost of this would be prohibitive. So Ben Lomond seems to be beyond our reach for the time being.

Northern Branch Meets at Scamander.

There is going to be a Social Day on Saturday, 10 January at the QTH of Paul VK7KPG at Scamander. It is at 24 Targett Street and commences from 10.00 am. All are welcome. Oh, and don't forget the sunscreen! Last year I became burnt from the sun and bitten by mozzies.

January Happenings

The Southern Branch won't be holding a monthly meeting on 3 January, yet the regular Wednesday afternoon sessions will be continuing at the Domain Activity Centre, VK7OTC, from noon till 4 pm.

The North-western Branch will be meeting on 13 January at the Penguin High School, Dial Road, Penguin from 1945 hours.

The Northern Branch will hold a general meeting at Scamander at the social day on Saturday, 10 January and it will be held at approximately 1400.

Divisional Council will be meeting on 31 January on the Northwest coast at a venue to be advised. This will be the final Council meeting prior to the AGM. Don't forget that Branch's AGM will be held next month.

That is all for January. Have a safe time if you are holidays.

Robin L Harwood VK7RH
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■ News

Club News

GARC (Geelong Amateur Radio Club)

As part of the Geelong Amateur Radio Club's 50th anniversary celebrations next year, we have been successful in securing the commemorative callsign VI50G (that is, Victor India 50 Golf).

We have the callsign for all of 1998, and we plan to hit the road running with it on New Year's Day. We will, of course, be using the callsign for the VHF/UHF field day in January, as well as in many contests throughout the year. Additionally, we will be planning a roster of operators to ensure that the callsign gets as much exposure as possible, on every band and mode we can muster.

There will be a special QSL card produced, and we aim to QSL 100%. Currently we have a couple of members working on the production of cards (especially on funding them!). We didn't start this until we were sure that we had the callsign, of course.

Chas Gnaccarini VK3BRZ

North East Radio Club

The North East Radio Club was formed in early 1990 by a group of adult students attending an AOCP theory course run by the SA Division of the WIA each Saturday morning. At the time there were no radio groups located around the north eastern suburban areas of Adelaide and, consequently, the club has grown rapidly since its inception.

A committee was formed at the inaugural general meeting to manage affairs with the intentions of providing and fostering friendship, help and education among the local amateur radio community. This has been well accomplished to date and an indication of this has been reflected in the excellent attendance at general meetings. They are held every second Friday in the month at the Ardtornish Primary School in Saarinen Avenue, St Agnes commencing at 7.30 pm. Excellent safe car parking facilities and a very comfortable venue are provided.

A great variety of talks, demonstrations and other practical exercises, generally related to electronics, are programmed from month to month. Visitors are always very welcome at these meetings.

Rick Grivell
President NERC

Sunbury Amateur Radio Club Inc (SARC)

I have been reading the articles in *Amateur Radio* about the Internet and the concerns expressed on the in-roads it may be making on the hobby of amateur radio. These articles started me thinking and I have come up with a discussion paper on how we can promote amateur radio on the Internet with a Club Directory.

The discussion paper can be found at *http://www.ozemail.com.au/~vk3dvo/* For those who can't arrange access to the Internet to get a copy of the discussion paper, you can write to my address (it's in the Call Book).

The SARC have also put together a Club Page and published it on the Internet. It can be found at *http://www.ozemail.com.au/~vk3dvo/sarc/*

Ian Morris VK3DVO
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WIA News

UK Amateurs Getting 136 kHz, Giving Up 73 kHz

Further to the November *WIA News* announcement (page 6), the Radio Society of Great Britain (RSGB) reports that Full Class A licensed amateurs in the UK will shortly be able to use 135.7-137.8 kHz, the same as the new European allocation recommended by the CEPT.

The UK's 73 kHz band will now be phased out on 30 June 2000, extending the original deadline by six months. UK amateurs can still get permission to operate on 73 kHz up to 30 June 1998, six months later than the original deadline of 31 December 1997.

[Released 1/12/97]

■ Keyers

Three-Chip Electronic Morse Keyer

Drew Diamond VK3XU
45 Gatters Road, Wonga Park VIC 3115

The three-chip electronic keyer in its case.

If you enjoy using CW Morse, and have been on the look-out for a good, simple, easy-to-make-and-use electronic keyer, then this could be the one. The circuit originally appeared in *Electronics & Wireless World* back in June 1986, and was contained in a paper by Jim Owens, W5JQE (Ref 1). It came to my attention through an article by Ian Smith VK8CW in the pages of *Lo-Key*, journal of the VK CW Operator's QRP Club (Ref 2). Not needing another keyer, I built it up anyway – just for fun.

This circuit simply "wants" to work, and does everything claimed of it in Jim's original paper. The only thing lacking was a sidetone monitor, which I have added. I also made two or three small changes, including relay interface rather than solid state, for reasons which will be explained later. Features include:

- Instant starting, with uniform length of dots and dashes;
- Self-latching and self-completing dots and dashes;
- Mark-space 50% on dots, and 75% on dashes, with provision for some manual adjustment of duty-cycle (weight);
- Uniform spacing between dots, dashes, and dashes and dots;
- Very good immunity to strong RF fields;
- Keys any polarity, at up to 1 A, 100 V;
- Speed range from about 10 WPM to 40 WPM;
- Internal sidetone monitor;
- Low parts count, printed circuit board construction; and
- Readily available components.

Not a bad list of features for just three ordinary chips. What we don't get is frills such as iambic keying and message memory. It has been argued that iambic style keying only comes into its own at high speeds. What we do get is a keyer which is a delight to use, and helps to make CW operating even more of a pleasure than it already is.

Circuit

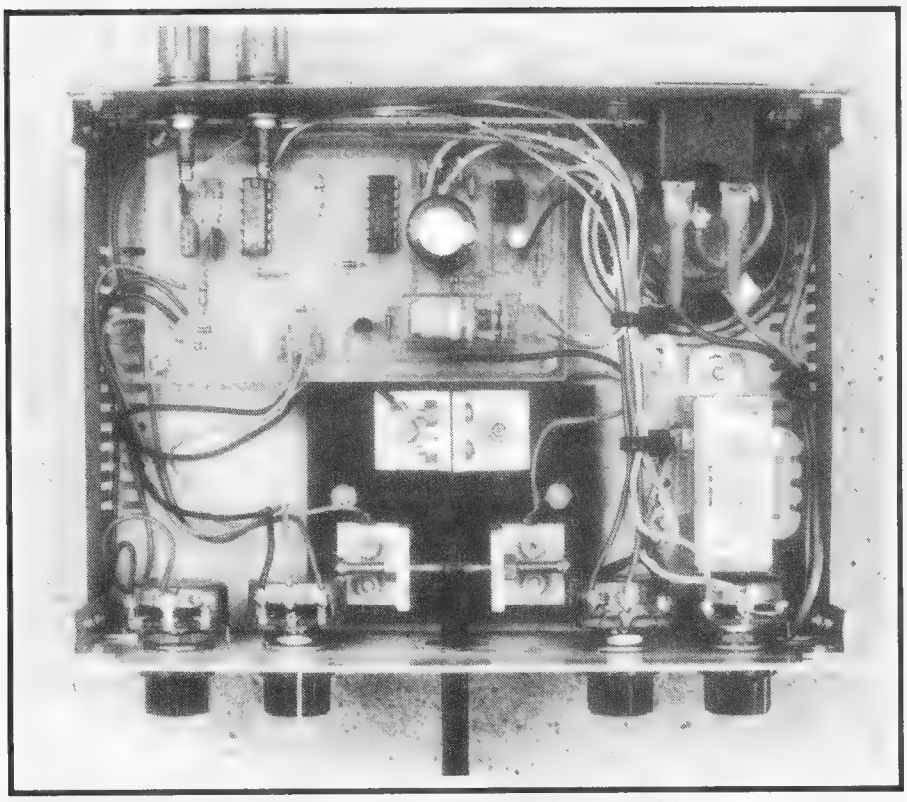
The first two NOR gates of U1 are connected in a loop to form a clock oscillator. When the dot paddle is closed momentarily, a logic low is applied to pin one which, by inversion, generates a high at pin three. A low therefore appears at pin 4. Resistor R1 couples this low back to pin one. R2 plus R3, in time-constant with the 0.47 µF capacitor C3, will hold pin four in the low state until R2 plus R3 and C3 have gone through their discharge/charge cycle, and have returned to their original quiescent state.

The pulse thus generated is "self-latching", and self-completing, regardless of the brevity of the dot contact closure. If the dot contact is held closed, the clock produces a uniform string of square-wave pulses. Potentiometer R3 alters the time-constant in order to give a speed adjustment. In this iteration, range is from about 10 to 40 words per minute.

Some adjustment in mark-space, or weight, is provided by R8. At the negative end of its travel, dots (or dits) will be heavier, up to 53% make, and at the +9 V end, they will be light, down to about 43%, with correspondingly weighted dashes.

When the dash contact is closed, a low is applied via D1 to pin one of the clock, which is enabled. At the same time, a low is applied to Reset pin four of U2, a D-type flip-flop wired to divide by two, thus out-putting a high at Q pin one which, when NORed with the dot on pin eight of U2, produces an inverted dash pulse at pin 10 three times as long as one clock pulse (or dot). The fourth NOR gate of U1 provides a simple invert function to source current into the base of Q1, which turns on, thus operating the relay. The contact of the relay keys the transmitter in the normal way. The high at pin 11 of U1 also enables the '555 timer, wired as an astable multi-vibrator to produce side-tone monitoring (and also off-air practice).

Most of my rigs are "positive keyed". That is, the potential of the keyed circuit is positive with respect to earth (or ground) when the "key" is open. When the key is closed, it must "pull" this potential to earth to key the transmitter on. As far as I know, most recent transceivers are positive keyed. However, there may well be a number of rigs still in service which key a negative line to ground.



Internal view of the keyer showing the paddle assembly.

The FT200, for instance, has a grid-block potential of -100 V with respect to earth. Also some older rigs use cathode keying, where something like +100 V at perhaps 250 mA must be keyed. A small transistor like a 2N2222 at Q1 may not be up to the task. Hence the relay. With isolated fat contacts, you can confidently plug this keyer into any conventional rig, and expect to key it, regardless of polarity, voltage, or current. The relay used is not objectionably loud.

Construction

A printed circuit (PC) board measuring 105 mm x 65 mm accommodates all components except the "chassis-mounted" parts. The keyer is remarkably immune to nearby RF fields. Indeed, the first "lash-up" circuit, which was "blobbed" together ugly style, complete with full length leads all sticking up in the air, was not at all prone to interference from my 90 W HF transmitted signal. So it may be safely assumed that just about any favoured construction style will work.

The metal box shown is a stock item, measuring 180 x 132 x 60 mm WDH. However, a cheaper plastic box would probably be satisfactory also, but keep in mind that the finished assembly must have some mass in order to prevent it from moving about the operating table if an internal paddle is used.

Holes for components on the PC board should be drilled 0.9 or 1 mm (#65 or 60), and those for the relay are drilled 1.4 mm (#55 approx). Corner mounting holes may be drilled to suit your mounting hardware – 3 mm is suggested. Solder in all passive components first, chips last. Observe correct orientation of all polarised components. Pin one of each chip, diode direction, and electrolytic capacitor polarities are shown on the copper side of the PC board as an aid.

The 4000 series chips do not appear to be especially prone to electrostatic damage – my own "ugly" circuit was worked on during hot dry weather with no great handling precautions being observed during experimentation, so I do not think that damage will result during normal assembly. However, do make sure that your electric soldering iron tip is properly connected to mains earth.

If your equipment is positive keyed at low current/voltage (eg TTL type levels), and there is never a need to key other types, then the relay may be omitted, and the collector of Q1 becomes the "keying" line in the usual way. Also, without the need to drive the relay, current demand is so low that an ordinary little 9 V transistor radio battery will power the keyer for a long time.

The mains power supply shown uses a conventional centre-tapped 12.6 V winding arrangement, with two diodes and single filter capacitor, which delivers about 9 V DC. The Altronics type M-2851 transformer shown has its own internal fuse. A 500 mA fuse should be wired in series with the line side (brown wire) of the 240 V winding if no internal transformer fuse is fitted.

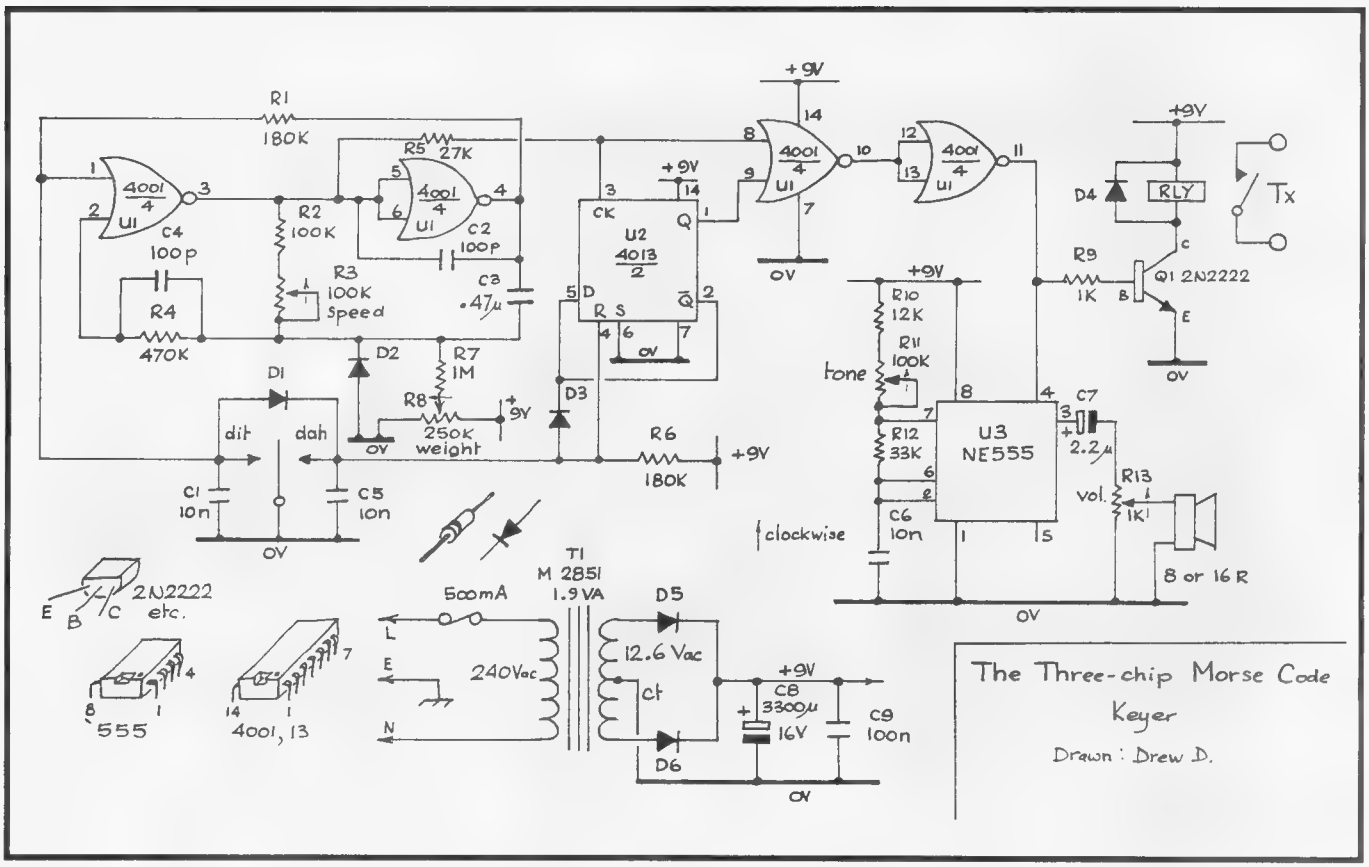
Power consumption is so low that a mains on/off switch is not required. All mains wiring must be properly covered, or insulated, to prevent accidental contact, and mains earth must be connected to chassis with a dedicated (that is, not a shared function) screw, lock-washer and nut.

The circuit will work satisfactorily from about 6 to 13 V DC, but operates best at 9 V. With the relay fitted, maximum current demand is about 50 mA. For portable use, or if you do not wish to operate the keyer from mains power, the device will work quite happily for a long time from a set of six size C or D cells. Circuit board negative common may be left "floating", or connected to chassis ground as desired. If keying with Q1, then connect 0 V to chassis ground. A spare PC hole is provided for this connection.

Keyer Paddle

There are one or two very handsome looking, and undoubtedly nice to use, keyer paddles available. However, quite good paddles may be made from back-to-back mounted straight keys (of the smaller type, such as WT 8 amp or J38), with paddle knobs to suit. Or you could make something like that shown, which only took a couple of pleasant hours in the workshop using scrap components.

The moving part is a 70 mm length of hack-saw blade, snapped (that is, fatigue-fractured), from an old blade. The brackets are made from off-cuts of L-section aluminium. Most hack-saw blades are only hardened at the teeth, the remainder is quite soft, and can be drilled



in the normal way. The pivot should be supported by two 3 mm screws, sandwiched between two L-brackets.

The fixed dot and dash contacts are a pair of 4 BA nickel-plated round-head screws, each with a lock-nut, which are fitted into 4 BA threaded L-brackets. Naturally, 5 mm, etc would serve. If you do not have a tap to suit, simply drill to clearance size, and fit a lock-nut each side.

Exposing the metal of the blade to obtain good electrical contact with the dot/dash contacts would probably be quite reliable if the keyer is used regularly (and therefore, the blade does not get a chance to rust). However, some sort of non-oxidising contacts are recommended. The contacts shown were salvaged from two old sets of Holden ignition points. The moving contact, plus sufficient of the little arm was fatigued off with pliers. The metal part may then be soft-soldered to the blade.

Hint; soldering one contact poses no problem, but how to solder the second one without de-soldering the first? Scrape the paint from the blade to expose bright metal. Pre-tin both sides with solder. Pre-tin the back of the salvaged contacts. Now position the two contact points back-to-back in position on the blade, and fix them there with an alligator clip across the faces of the contacts. Heat with the soldering iron, and flow a little extra solder in the usual way.

Insulating material, such as Bakelite, Perspex, polycarbonate, etc would be fine for the base of the paddle assembly, and a suitably sized and shaped piece may also be used to make the paddle knob, which is fitted to the existing hole in the blade end. Remember to recess the screw heads under the L-brackets so that they do not short to chassis.

Upon assembly, set the distance between contacts to about 0.5 mm for a start, then adjust to taste on completion. The convention for auto and semi-auto keyers is that, for the right hand, dots are produced from the thumb and dashes from the fingers, so the paddle contacts should be wired accordingly.

Operation

Before applying power, go over all your wiring and component locations again, and confirm that all is correct. On power-on the circuit will output a single dot. Closing the dot and then the dash contacts should yield an evenly spaced string. Check operation of the four controls; speed range from slow to fast, weight variation from light to heavy, monitor tone about 800 to 1800 Hz, and monitor volume, from nil to loud.

Get the feel of the keyer at low speed first then, as skill and confidence build, so should speed. Correct spacing between letters and words is completely under the control of the operator. Watch out for the common errors of sending N N for C, M A for Q, P for AN, and G for ME (NAG instead of NAME is a common one). Also, try not to go "on-air" until a reasonable proficiency has been attained. Always remember, the mark of a good Morse operator is sending which is not necessarily fast, but is accurate, clean, and correctly spaced.

Now, just a personal opinion, which is at odds with the popular myth; it should be possible to continue to use a bug, and certainly a straight-key, after gaining proficiency with an electronic keyer. The trick is to regularly use all three,

depending upon working speed, conditions, and by applying the courtesy of matching the key type that you think the other operator is using.

Parts

As mentioned, all components specified are conventional, and should be available from your usual electronics component retailer, such as (in no particular order) Rod Irving, Dick Smiths, Jaycar and Altronics, etc. In or near Melbourne there are also All Electronic Components, Stewart Electronics, Rockby's and Truscotts Electronic World.

The only special component is the PC board. If you require a professionally made pre-drilled board, please write to me at the address shown, and include an SASE. Non-profit cost is $8.00.

References and Further Reading

1. *"Improving 4000 Series Oscillators", Owens, W5JQE, E & WW, June '86.*
2. *"Automatic Electronic Keyer" Smith, VK8CW, Lo-Key #46, June '95.*
3. *"Changing to a Keyer" Bold, ZL1AN, Morsum Magnificat #42.*
4. *Engineer's Notebook #2; Mims, Radio Shack/Archer.*

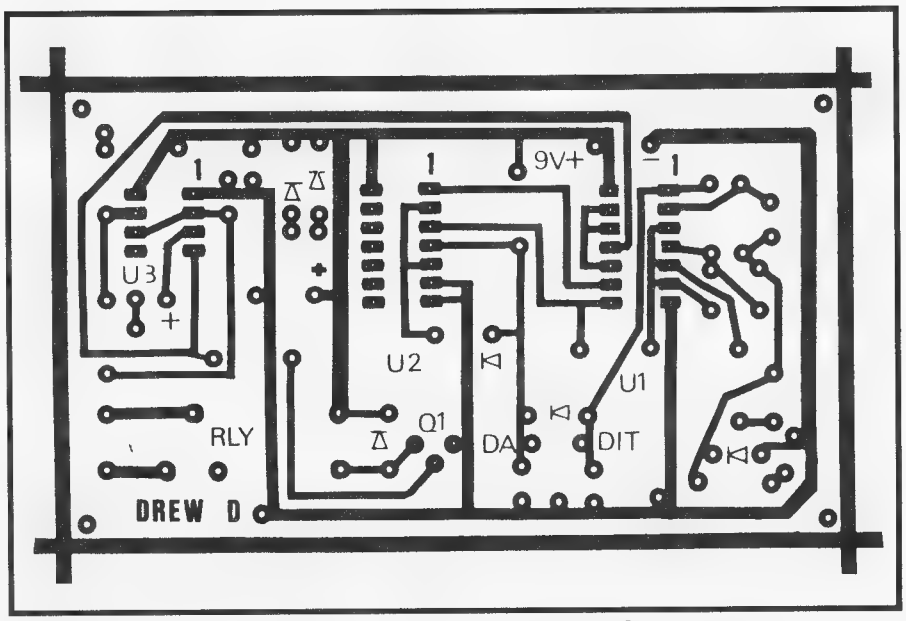
Parts List

Resistors

1 k 1/4 W 5%	R9
1 k log or lin pot	R13
12 k 1/4 W 5%	R10
27 k 1/4 W 5%	R5
33 k 1/4 W 5%	R12
100 k 1/4 W 5%	R2
100 k lin pot	R3, R11
180 k 1/4 W 5%	R1, R6
250 k lin pot	R8
470 k 1/4 W 5%	R4
1 M 1/4 W 5%	R7

Capacitors

100 pF ceramic or monolithic	C2, C4
10 nF (or 103 or 0.01 µF) mono	C1, C5, C6
100 nF (or 104 or 0.1 µF) mono	C9
0.47 µF (470 nF) mono non polar	C3
2.2 µF 16 V electrolytic	C7
3300 or 2500 µF 16 V electrolytic	C8



Artwork for the keyer circuit board shown actual size.

Semiconductors

1N914, 1N4148, etc	D1, D2, D3, D4
1N4004 etc	D5, D6
CD4001 C-MOS chip	U1
CD4013 C-MOS chip	U2
NE/LM-555 timer chip	U3
2N2222, 2N3704, etc	Q1

Miscellaneous

Case to suit, PC board, insulated PC board mounting spacers (4), 8 or 16 R miniature speaker, 12 V relay with n/o or c/o contact (eg Rod Irving S14116, Jaycar SY-4050 or DS P8010), Tx terminals (2), knobs (4), mains cord, 12.6 V AC CT transformer type M-2851, paddle (see text), hook-up wire, solder, 3 mm or 1/8" Whit screws.

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WIA News

More Good Publicity for Amateur Radio

Amateur radio and the Wireless Institute gained nation-wide publicity in the nationally circulated *Australian Financial Review* on Tuesday, 18 November in a story about the commemorative Sputnik satellite currently in orbit and transmitting on the two-metre band.

The story, written by Financial Review journalist, Helen Meredith, and titled "Celebrating 40 years of Sputnik", resulted from a WIA media release sent out in the first week of November, following the launch of the scale model Sputnik by cosmonauts aboard the MIR spacecraft. The role of amateur radio in the Sputnik project was highlighted in the story, along with the fact that it was built by French and Russian school children.

WIA Federal President, Neil Penfold VK6NE, was quoted, from the WIA media release, explaining that the satellite was easy to hear using simple equipment.

The story went on to explain how the tone transmitted by the satellite indicated its internal temperature and that, *"WIA says listening for the satellite and taking its temperature is an ideal school project."*

The World Wide Web addresses of the French Sputnik team and the Amateur Satellite corporation were included by Helen Meredith in her story. For those who missed them in a previous WIA News item, they are: *http://www.oceanes.fr/~fr5fc/angspoutnik.html*, and *www.amsat.org*.

[Released 18/11/97]

Antennas

The Clemens Match

Phil Zeid VK6PZ
64 Dalkeith Road, Nedlands WA 6009

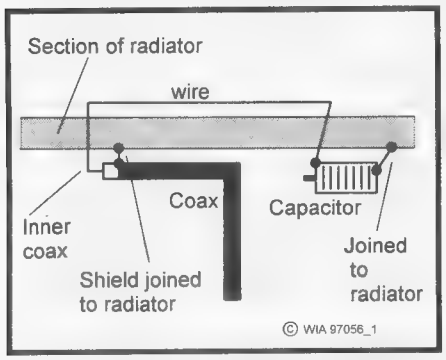


Fig 1 – The Clemens match. The coax feeder is run to the centre of the radiator, then along the radiator out to a distance of approximately 0.1L where the shield is attached to the radiator (L is a half wavelength). The inner wire of the coax is then joined to another wire which runs parallel to the radiator and back to a point equidistant from the centre on the opposite side. Here it is joined to the radiator through a variable capacitor.

The Clemens match is a balanced match and easy to adjust, so it is surprising that it is so little known. The only reference that I can find is on page 12.37 of the 5th edition (1983) of the RSGB handbook.

The Clemens match, as illustrated in the RSGB Handbook, is as shown in Fig 1. The original article does not show the coax shield joined to the centre of the radiator. The writer feels that this may be an omission. The match has been built both with the insulated cover stripped from the coax and the copper shield then strapped along the radiator and also (the preferred method as described here) with the coax shield only attached to the radiator at its centre and its end. Both methods worked satisfactorily.

The match works equally well with a tube substituted for the wire. A metal is preferred as it provides rigidity and strength and avoids the need to support the wire at many points to prevent it moving or being displaced by kookaburras or other birds perching on it.

Experiments at ground level show that none of the measurements given, such as the size of the matching rod, distance to the outer end of the coax, or length of the radiator seem at all critical. The only care needed is to ensure, for good balance, that both ends of the tube or wire are connected to the radiator at the same distance from its centre.

Impedance matching is obtained by the spacing between the tube/wire and the radiator. Reactance is tuned out using the variable capacitor.

There is very little interaction between the impedance matching and the elimination of reactance. For information, and as a guide only, the dimensions of the 14 MHz radiator and match presently in use are:

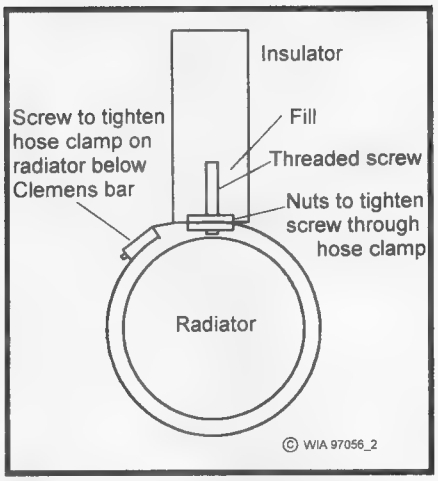


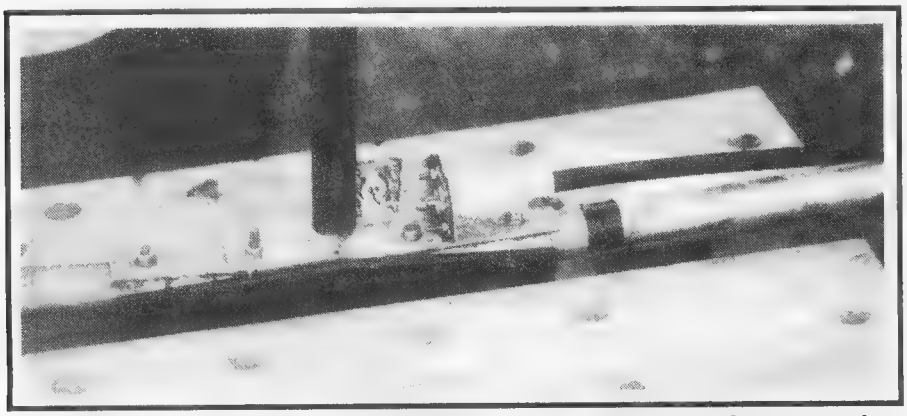
Fig 2 – The insulating system that allows adjusting the distance of the tube from the radiator.

Length of radiator = 10.18 m (33 ft, 4 ins)

Length of tuning tube = 2 m (6 ft, 6 ins), 1 m each side of centre.

Diameter of the tuning tube = 16 mm aluminium tubing.

The capacitor is estimated at between 75 and 100 pF maximum with medium spaced vanes to avoid shorting out by condensation. With the antenna at the top of the tower it is about one third open. It is protected by a plastic box open at the bottom and bolted to the radiator using plenty of aluminox ® at the jointing sections. A wire from the stator passes through the side of the box and is joined to the tube. The wires running to the end of the rod should be reasonably flexible (I used RG58 braid) and long enough to allow the rod to move towards and away from the radiator.



The centre bracket, the centre insulator and the coax running out to the 0.1L point.

Construction

A Clemens match has been used here for over 10 years but was not of sound construction. The result was that Murphy eventually took up residence on the antenna. To overcome problems, discussions were held with Don VK6UT and Cec VK6AO to find suitable methods of construction. Don suggested insulating the system that allows adjusting the distance of the tube from the radiator (see Fig 2).

Cec VK6AO suggested and made up brackets with sockets to fix the radiator at

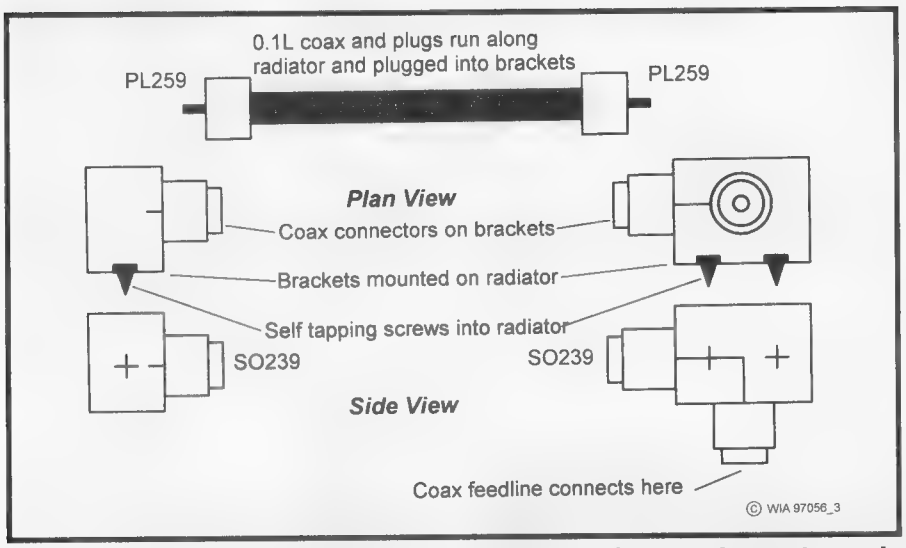


Fig 3 – The brackets with sockets to fix to the radiator at the centre and out to one side. The brackets are mounted with aluminox® between joints.

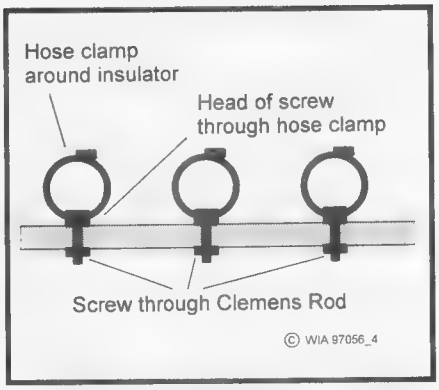


Fig 4 – The metal matching tube. The three insulators are positioned under these clamps. The rod is moved to tune and then locked in position.

the centre and out to one side (see Fig 3).

The two aluminium brackets are screwed to the radiator using stainless steel self tapping screws. One bracket has two sockets for PL259 plugs. One faces at right angles to the radiator which takes the coax feed line and the other faces along the radiator to take the coax which runs out to the 0.1L point.

The other bracket is an 'L' bracket with one socket. It is fixed to the radiator with stainless steel self-tapping screws at the 0.1L point from the centre. Make sure plenty of aluminox ® is used between all connections and brackets. A suitable length of coax is made up with plugs at each end, to fit into the sockets. The plugs and sockets are eventually taped with stretchable rubberised tape used for sealing ships rigging. It is obtainable at most hardware shops.

The Insulators

Three insulators are used. These are made from 108 mm (7 inch) lengths of insulated tubing (sections of reticulation risers or rigid polypipe) with plugs at the bottom into which stainless steel threaded rod was fixed. The threaded rod goes through a hole drilled in a stainless steel hose clamp, of size suitable to fit around the radiator, and bolted on tightly. This allows the insulator to be fixed at any desired point on the radiator. If the insulator material is hollow the top should be sealed to prevent rain entering.

The author, Phil VK6PZ (second from left) ready to test the Clemens match at ground level with the help of (l to r) Don VK6UT, Cec VK6AO and Jim VK6RU.

The Metal Matching Tube

The tube has three holes drilled into it, one at the centre and one on each side just over half way out to the end. Each hole has a stainless steel bolt run through it. The other end goes through a hole drilled in a stainless steel hose clamp, of a size suitable to slide over the insulator. Make sure that the screw for tightening the clamp is clear of the rod and facing inwards so that it is easily accessible from the centre of the radiator (see Fig 4).

These clamps slide over the three home made insulators that are fitted to the boom. These clamps are set with a slight friction so they can be moved during tuning after which they are tightened in position.

The completed matching system is shown in Fig 5.

Tuning

It is strongly recommended that you use a noise bridge that measures both impedance and reactance. In my opinion, 'nulling' the impedance is essential for a parasitic array to work properly. Nulling the reactance means that the radiator is resonant at the design frequency. This is necessary to have the

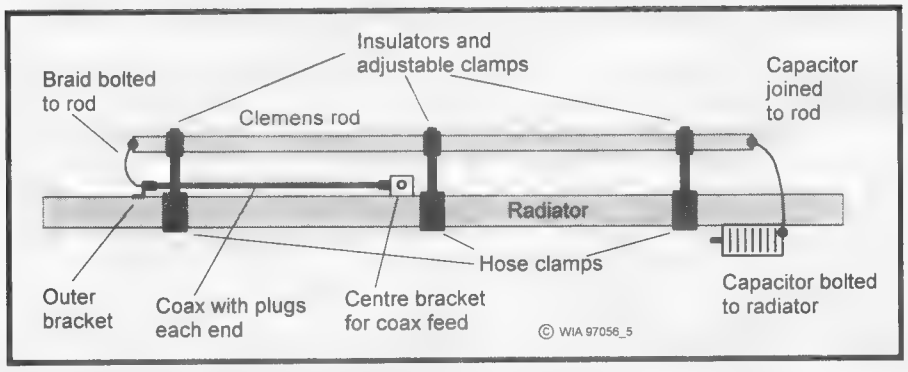
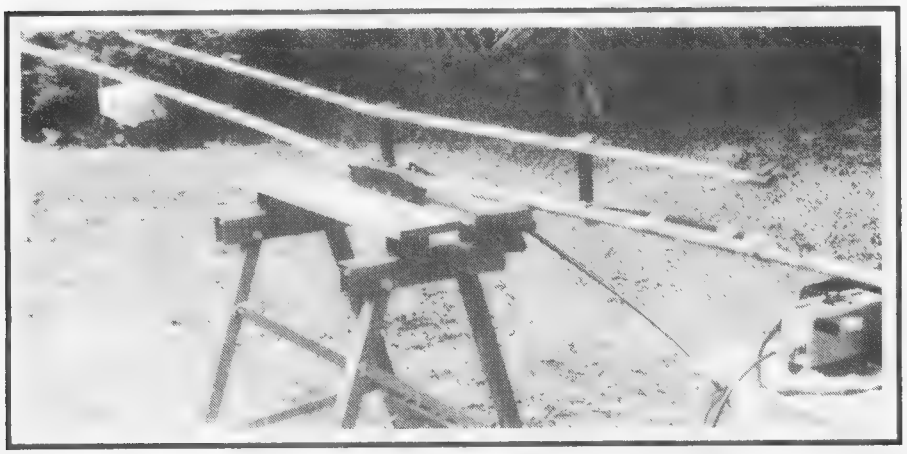
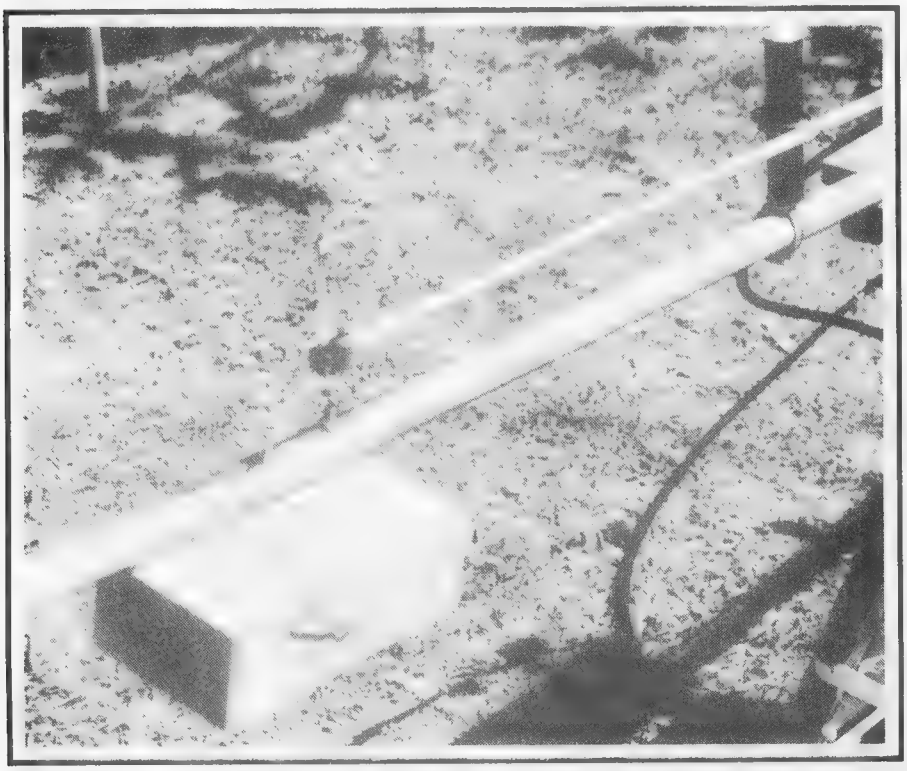


Fig 5 – The complete matching system.



The match finished and ready for testing.



A close-up of the rod and insulator with clamp on the insulator and the radiator. The tuning capacitor is in the box.

correct frequency relationship to the parasitic elements and hence provide the designed gain and back to front ratio.

Getting the best impedance match without knowing if the radiator is resonant at the design frequency is probably a major reason for poor Yagi performance. So, use a non-inductive resistance, of the same value as the coax, to calibrate the impedance of your noise bridge and check to the 'null' reactance point that you will use when matching the antennae.

To Adjust

To get the feel of how the Clemens match works you can experiment with matching the system with your antenna, or radiator alone, near level ground. For best results it is essential that final adjustment is made with the antenna in place. Do not work up the mast without a safety harness.

It is suggested you proceed as follows. Set up the noise bridge to the zero reactance point and leave it there. With the noise bridge attached to where the coax will eventually be attached, tune the noise bridge resistor and/or the Clemens capacitor until a reduction in noise is heard. Adjust both, one after the other, until a clear null is obtained.

The antenna is now matched, but not necessarily at the right impedance for the coaxial feedline. If the noise bridge reads higher than that of the impedance of the coax to be used, move the tube in toward the radiator and vice versa. Adjust the tube and recheck the new resistance null point.

Repeat this operation until the resistance reading on the noise bridge equals that of the coax. If required, adjust the Clemens capacitor for best null reading. Leave the noise bridge reactance control at the zero position.

This completes the tuning. It is quick and easy to do. When satisfied, reach out and tighten the hose clamps on the insulators. Finally, recheck the Clemens tuning capacitor. Remove the noise bridge and connect the coax feedline.

You should now have a balanced match, a 1:1 SWR, and a radiator resonant at its design frequency, therefore having the correct relationship to the parasitic elements.

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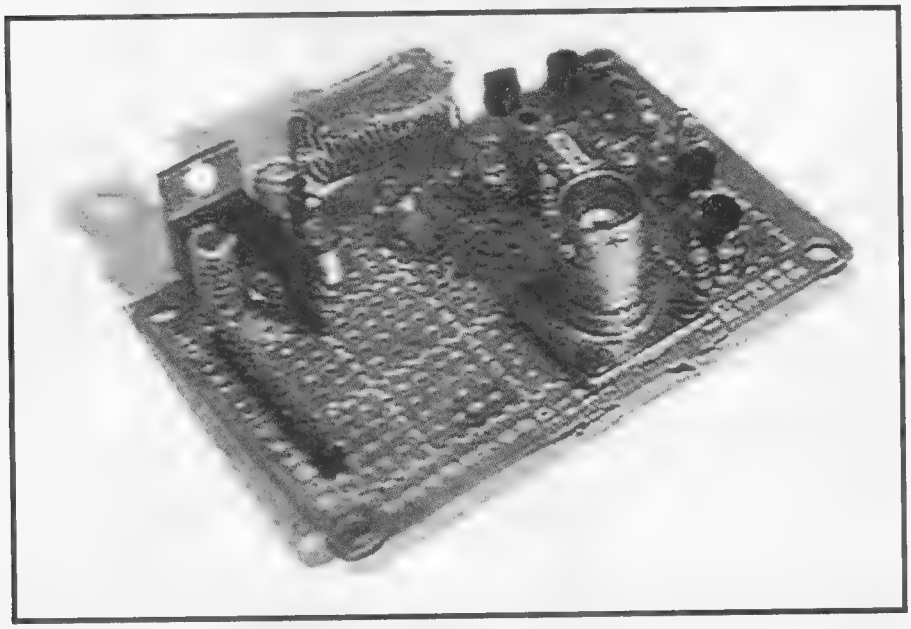
■ Repeater Link

VHF/UHF Signal Generator

Will McGhie VK6UU
21 Waterloo Crescent, Lesmurdie 6076
Packet: VK6UU @ VK6BBR
E-mail: will@vale.faroc.com.au



The circuit constructed on Tandy board.

Useful?

I do not know how reproducible this circuit is. However, after spending some 50 hours to develop it over several months, I hope you will find it useful and, at the very least, give you some ideas on how simple a signal generator can be for VHF and UHF.

VHF/UHF Signal Generator

If you build, service or play around with voice repeaters, digipeaters or FM radios in general, then a signal generator is a very valuable piece of test gear. This article is a design for a signal generator that covers the 2 metre and 70 centimetre bands. The generator is continuously variable in frequency and level, and has provision for audio input, be it voice, tone or CTCSS.

What Frequency?

Once the signal generator is working, how do you know what frequency it is on? It would be possible to calibrate the frequency and provide some form of dial but, in practice, I have not found this necessary. Open the mute on the radio under test and tune the signal generator across the band and you will find the correct frequency fairly easily. If it is a new radio you are tuning up, then use another radio as a frequency marker. Find the required frequency on the working radio and then connect the radio to be tuned up to the signal generator.

Background

It is important to understand a bit about this design to gauge how it suits your requirements and what limitations the design might have. As I have mentioned, I don't know how reproducible this signal generator will be, as the method of construction is largely up to you.

I have had access to a commercial signal generator at work for many years but always wanted my own. Many years ago Dick Smith Electronics was throwing out a companion VFO, the FV107 for next to nothing. I bought one and it lay around for a while until I modified the frequency of operation. The original VFO ran at about 5 MHz, and I was able to increase the frequency up to about 90 MHz. The circuit would just not go any higher without extensive changes; pity, I thought, as it would have been nice to get it up to 148 MHz for use as a signal generator.

As a compromise I set the VFO up at half the two metre band frequency of 72 to 74 MHz, and it produced a nice signal on the two metre band due to the second harmonic. In fact, there was also a very healthy harmonic signal on 70 cm; so, two signal generators for the price of one. This brings me to some very important points about a signal generator, and they are:

1. It must be frequency stable;
2. It must have smooth, easy frequency tuning; and
3. It must have as close to no signal leakage as possible.

Number 3 is perhaps the most important of all, and the most difficult to obtain. If a signal generator radiates a signal from itself via power cords or poor RF shielding, it is next to useless. If the radio you are testing is picking up just as much signal via other paths as it is receiving via the correct signal generator output, then accurate measurement and alignment of the radio is difficult at best.

As it turned out, having the signal generator operating at a sub-harmonic of the desired frequency is a good idea, the reason being that there is less 2 m and 70 cm energy you have to shield against. Commercial signal generators usually operate on the same frequency as you require and, as such, have considerable RF shielding. The VFO unit is contained in a very thick metal box with extensive RF de-coupling of all connections to the VFO. This is difficult to achieve in a home brew unit.

Remember, the oscillator of a signal generator operating at the same

frequency as you require for testing, provides a volt or more of signal and your radio, when tuned up, can hear down to a fraction of a millionth of a volt. By using the second harmonic there is about 40 dB less signal level to deal with and RF shielding is that much easier to achieve. True, you have less signal level available, but do you really require a volt of signal to align a radio? If it is that deaf then it requires basic adjustment before the signal generator is used. Enough of the basics now; on to the design as presented.

The Best Laid Plans . . .

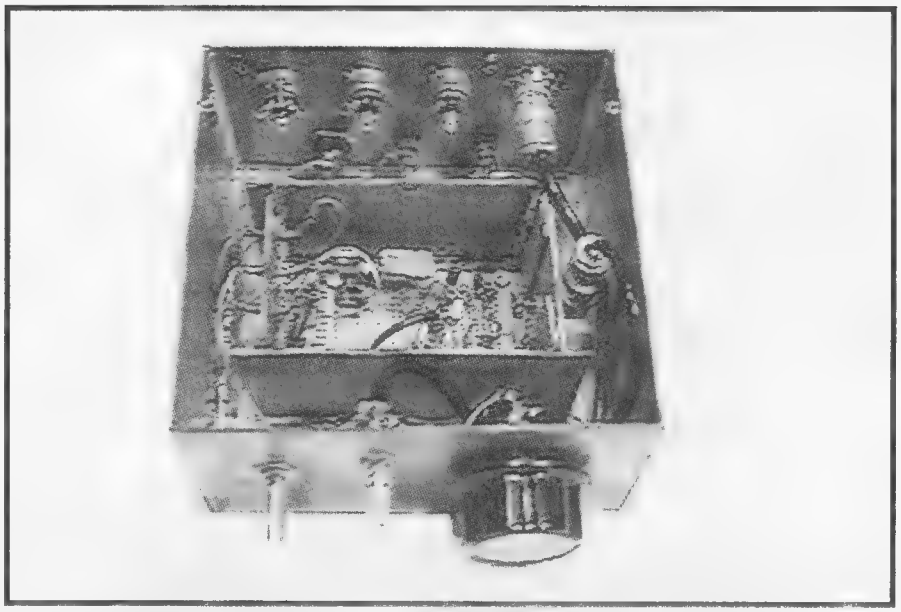
So started the article intended for the December 1997 issue of *Amateur Radio*. However, I decided to do some minor modifications and, in the process, discovered the oscillator would not always oscillate. Try as I might the circuit was just not reliable enough. If I had problems with the design, what was the point of expecting others to reproduce the signal generator?

It may be that the oscillator running at around 73 MHz was not the correct design for this frequency. This forced a lot of thinking and finally a decision to lower the frequency of operation. It was then that I had a bright idea; lower the fundamental frequency of operation to around 29 MHz; 29.200 MHz times 5 is 146 MHz The reason for picking this frequency is that most amateurs have an HF receiver that covers the 28 to 30 MHz band. This could be most useful for testing and setting up the signal generator.

What is the worst thing an oscillator can do? Answer, not oscillate. Sounds silly, but if you build an oscillator and it does not oscillate you have two problems. Firstly, you may not realise it is not oscillating and secondly, once you discover it is not oscillating, how do you make it oscillate? To do this you require a means of checking to see if the circuit is oscillating and, if so, on what frequency. With many amateurs having limited test gear this is of the utmost importance There is no point in designing a signal generator if most amateurs can't make it go. So the 29 MHz fundamental idea has a lot of merit

The Circuit

Believe it or not, free running oscillators at 29 MHz are fairly stable provided the right components are used. This design, when listened to on 2 m, drifts from switch-on, but only tens of kHz for a few minutes on the harmonic on 2 metres, and then settles down to remain on frequency, only requiring occasional frequency re-adjustment. I have found it not unusual to remain close to a given FM frequency all day. Every time the radio under test was turned on, the signal generator needed no adjustment.



The Tandy board inside the circuit board box inside the box containing the controls.

(The two photos are digital photos taken with VK6UU's video camera, as his digital still camera cannot focus close enough.)

In my original design I wanted to use easy to obtain components so I experimented with RFCs available from Dick Smith Electronics. These chokes come in all sorts of values; so, after a bit of trial and error, a circuit was produced where the main frequency determining inductor was one of these RFCs. However, the temperature stability, and hence frequency stability, of the circuit was terrible. I had to return to using an air-wound coil as shown in the circuit. The two RFCs in the source leads of the FETs are those discarded as oscillator inductors, but are not in critical areas of the frequency determining part of the oscillator.

The other important frequency determining parts of the circuit are the capacitors shown with PS* next to them; these are polystyrene capacitors and are very temperature stable. It is important to use these capacitors!

What makes producing a signal generator like this difficult from scratch, is the correct frequency range. It is easy to make the circuit oscillate, but not so easy to make it oscillate on the frequency you want, and over the tuning range you want. Using a hand-held transceiver to find the operating frequency after each modification is very difficult, as changes can result in the frequency shifting many tens of MHz, or, in some instances, not oscillating at all. I was able to use a spectrum analyser for the ground work and this made it easy.

The frequency tuning is done using a varicap diode and a multi-turn potentiometer. A twenty turn pot is the best if you can find one; note that the value of the multi-turn pot is not important. Anywhere from 5 k to 1 M works as it is just a means of obtaining a smooth variable voltage. I found that Radio Spares sells a range of multi-turn pots. A large knob on the potentiometer is important to give you good control. As a variation, a small fine-tune pot could be included in series with the main tuning pot.

The varicap diode is a BB212 available from Dick Smith Electronics

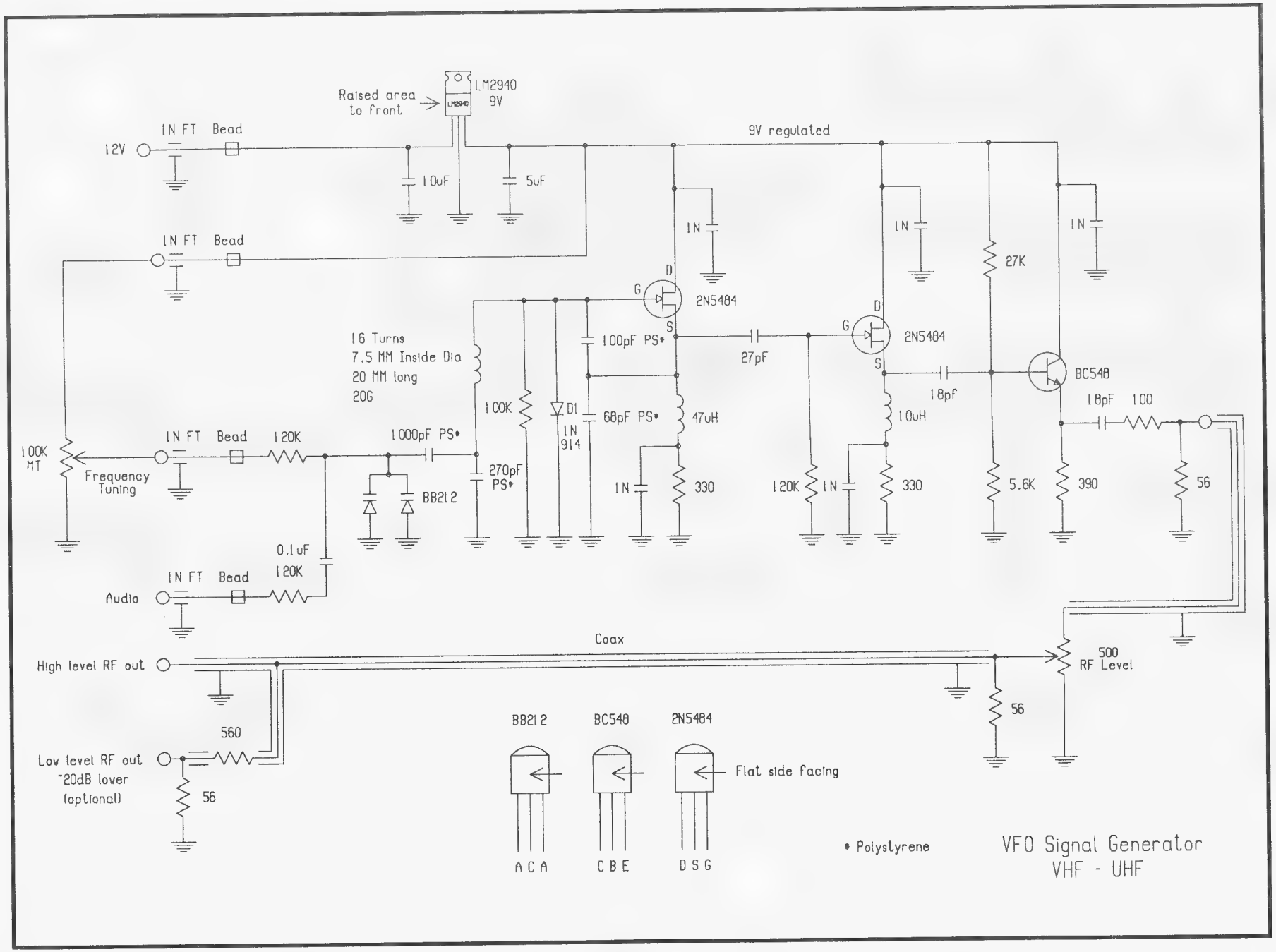


Fig 1 – Schematic of the VHF/UHF Signal Generator *(Drawn by VK6UU)*

and has a very wide capacitance differential (CD) of 22. At near zero volts the capacitance is about 600 pF, and at 8 volts about 30 pF. The BB212 is two varicaps in one package and I joined the two together. The cathode is common inside the package with two anodes. Join the two anodes together. This then provides a variable capacitor from over 1000 pF down to about 50 pF. This brings me to an important point.

The circuit will stop oscillating if the total capacitance from the bottom of the oscillator inductor to grounds falls too low. I found this minimum value to be around 200 pF. Note the fixed 270 pF capacitor between the bottom of the inductor and ground. This is required as the varicaps can be tuned to a low capacitance that stops the circuit oscillating.

Is It Oscillating?

When you build up the circuit you want to know whether it is oscillating before you go any further. I found placing a finger on the oscillator inductor changed the voltage on the source resistor to ground. It was not much of a change but enough to indicate the circuit was oscillating.

Signal Level

A signal generator must have a level adjustment. This can be difficult to obtain easily. I tried various methods and the simplest was a potentiometer. Carbon pots do not make good RF level adjusters and don't take the signal level all the way down to zero if too high a level is fed into them. This is because, even when fully down, there is some inductance, and at these frequencies that inductance means the pot does not go down to zero ohms. However, about 40 dB in range was obtained with a carbon pot. This lack of range with the carbon pot means that if you feed a signal level higher than 40 dB above the noise floor then you can't wind the level down into the noise.

Frequency Pulling

While on the subject of the RF level control, I found a small amount of frequency pulling when the RF level pot is turned fully up. On 2 m it amounted to about 2 kHz, so I added another buffer stage to the design; however, this did not fix the frequency shift. Having run out of time I don't know if this problem is part of the design or a condition that may not occur with any other units that are made. I would be interested to know if you find the same problem.

Construction

My circuit was built on Tandy board. These boards come in a variety of sizes and look like Vero board, but with all the solder pads isolated so that you have to join pads rather than cut between them. It works well and is easy to use.

The entire circuit board was enclosed inside circuit board material, with the lid soldered on. Along with all leads in and out going through feed through capacitors and with ferrite beads on each of the leads, the RF shielding is good. The RF output is via a BNC socket, or "N" type, as you prefer.

This box is then mounted inside another box that contains the controls, power in and RF out, and is also made out of printed circuit board material. A BNC or "N" type connector is then added to the outside box and the RF fed from the first connector via coax. Using printed circuit board material results in an easy way of obtaining a fully screened RF box.

Further Thoughts

A few comments about the design. My unit ended up producing about 30 µV on 2 m and 10 µV on 70 cm. The amount of RF output can be increased by changing the bias voltage on the last buffer transistor. I don't know why, but I found that lowering the base to ground resistor to about 2.7 k resulted in 100 µV on 2 m.

If the output pot will not lower the signal level low enough, increase the 100 ohm resistor on the output of the last buffer stage, or reduce the value of the 18 pF capacitor on the output stage. Another method, as shown in the circuit diagram, is to include an attenuated output with two outputs from the signal generator, one high level and the other lower level.

Note the diode between the gate of the oscillator FET and ground. This is to limit the drive to the gate and it also reduces the amount of harmonics produced. So, if you want a lot more output (20 dB), remove the diode, but you will have to add a capacitor to compensate.

My unit tuned from about 28 MHz (140 MHz, 420 MHz) to 29.7 MHz (148.5 MHz, 445.5 MHz). If you only require the 2 metre band, then reduce the frequency range by adding resistors either side of the multi-turn pot. This will also give you smoother frequency control with more turns required to shift frequency.

The oscillator inductor is air wound and supported by simply soldering onto the board. This inductor is vibration sensitive and acts like a microphone. To dampen this down, apply Silastic® over the coil. The wire I used is tinned copper and about 20 gauge. I was not sure of the size but it measured 30 thousandths of an inch on my micrometer. The coil turns are wound as close together as possible without touching.

Feedback

There are lots of possibilities to improve this design and I would like feedback on the design and attempts to build the generator. One idea that comes to mind is that the frequency tuning could be switched with different voltages to the varicap to give different band segments and hence slower main tuning.

The project is worth consideration as an RF signal generator which is worth its weight in gold for repeater site measurements. I hope to find the time to improve the design and provide greater signal output. Also, a design running at 146 MHz interests me. Does anyone have a circuit for a VFO circuit running at 146 MHz?

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WIRELESS INSTITUTE OF AUSTRALIA

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■ Equipment Review

Advanced Data Management Software

ADMS-1C for Yaesu FT-10R, FT-11R, FT-50R and FT-51R
ADMS-2C for Yaesu FT-3000M, FT-8000R and FT-8500R

Richard Murnane VK2SKY
PO Box R153
Royal Exchange Post Office
Sydney NSW 1225

The ADMS-1C interface cable and adapter with the FT-50R used in the review.

When I first became seriously interested in amateur radio, back in 1982, life was simple. A Yaesu FT-202R borrowed from my college radio club let me listen to activity on the local repeater (EI4LRC) and the common simplex frequencies. Six crystal-locked channels, volume and squelch, and nothing else.

How things have changed. In 1997, my FT-50R is less than half the size, has thousands of VHF and UHF channels and is programmable in more ways than I can remember. Miniaturisation has led to knobs and buttons having multiple modes, depending on whether you press them for just a moment, or hold them down for a second, or. . . . Suffice to say that things have become complicated When you want to use a feature for the first time in six months and you've misplaced the manual, what is a ham to do?

Help is at hand! The Advanced Data Management System (ADMS) lets you set up your rig with your personal computer. The software, which runs under Microsoft Windows, offers the convenience of a standard Windows interface, with menus, drop-down lists, option buttons, etc. Simply point and click at the options you require, or type in frequency values and so on as desired, then send the new settings to the radio.

The ADMS package comprises the software, on 3.5" diskette, and an interface cable suitable for connecting the computer to the rig via the mic/earphone socket (ADMS-1C) or packet data socket (ADMS-2C). For this review I used the ADMS-1C with a Yaesu FT-50R; the ADMS-2C operates in a similar manner.

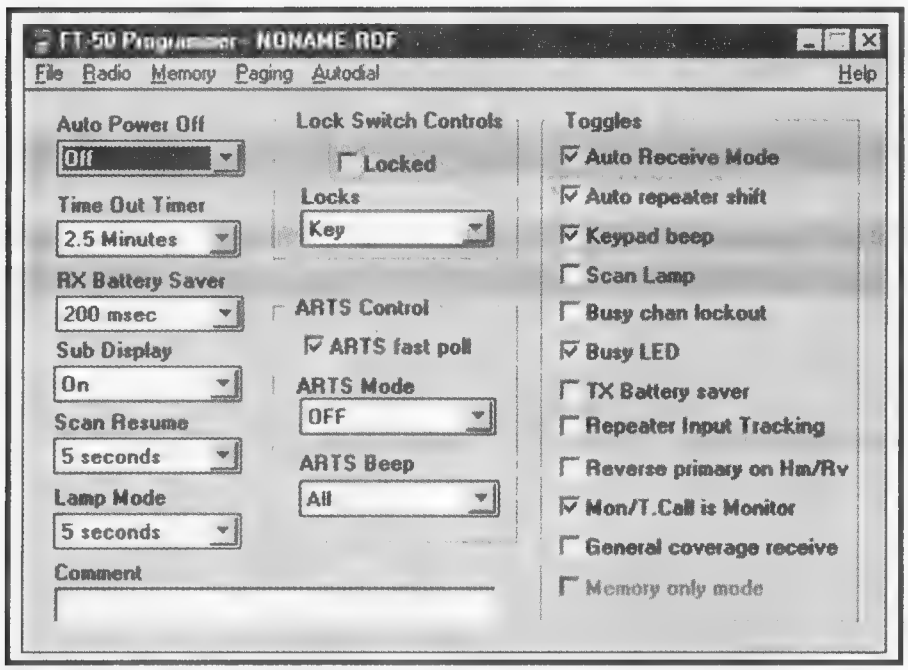
Software installation is as simple as one expects with Windows applications these days. Run the SETUP program, answer a few questions and you're ready to go.

The ADMS-1C interface cable comes in two parts

- a 9-pin "D"-type plug which connects to a serial port on your PC connected to a standard 3.5 mm stereo jack plug (if your serial port has 25-pin sockets only, you'll need to buy a 9-to-25 pin adapter); and
- an adapter with a 3.5 mm stereo socket at one end and a 3.5 mm 4 contact jack plug at the other. This is for use specifically with the FT-50R Those who own an FT-50R and external speaker/microphone will be familiar with the plug (and, like me, are perhaps miffed that Dick Smith doesn't seem to stock them.) The adapter may be useful for those wishing to homebrew their own speaker/microphone for the FT-50R, though be aware that it carries only audio in and out, plus ground, so it won't help you use the FT-50R for packet radio.

The accompanying screen dumps give some idea of how the various features can be programmed with the ADMS software. The interface is moderately intuitive; although, as the program was written for Windows 3.1, it doesn't take advantage of the ergonomic improvements added in Windows 95, such as context-sensitive menus.

The program uses different "templates" for each rig type. Normally, you would read the current settings from



The ADMS-1C default screen.

your rig and save them to disk, then program in the new settings, save to another file, and send them back to the rig. The procedure is quite simple and the program guides you through it all.

The templates are not interchangeable, so it's not possible to, say, clone the settings of an FT-50R onto an FT-51R.

The online help is sparse in places (sometimes just a single line telling you no more than the name of the control), and on occasion I have found it necessary to consult the manual about the finer details of those lesser used functions like paging and auto-dialling. Nevertheless, the ADMS is a worthwhile accessory for these rigs, and with the recent price cut from $85, they are even better value.

The units are available from Dick Smith Electronics for $69.95 each. The ADMS-1C (Cat no. D 3752) is for use with the Yaesu FT-10R, FT-11R, FT-50R and FT-51R hand-helds; and the ADMS-2C (Cat no. D 3758) is for use with the Yaesu FT-3000M, FT-8000R and FT-8500R transceivers.

Just as we were going to press, Chris Ayres from Dick Smith Electronics advised that new models would be available from the end of December at $79.95 each. The ADMS-1D will replace the ADMS-1C, with the addition of the new VX-1R dual band micro hand-held to the list of equipment it can be used with; and the ADMS-2D will replace the ADMS-2C with the addition of being also suitable for use with the new FT-8100 transceiver.

I would thank Dick Smith Electronics for the loan of the review unit if I hadn't already bought one for myself!

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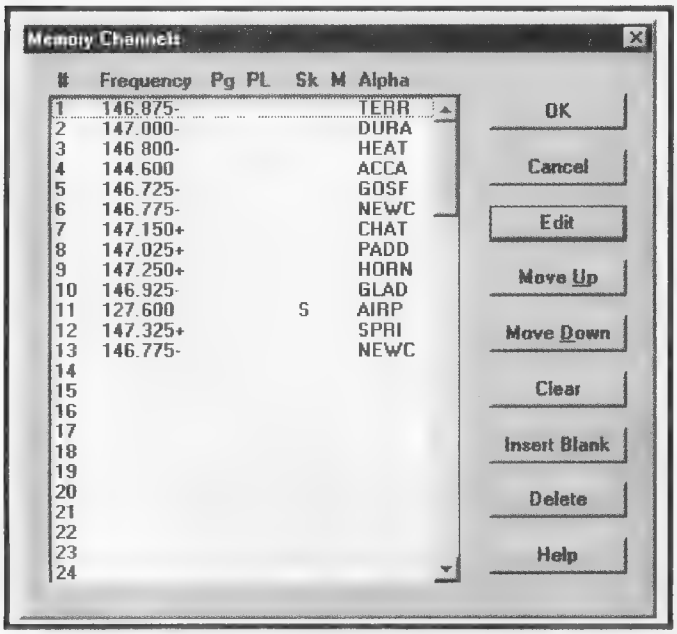
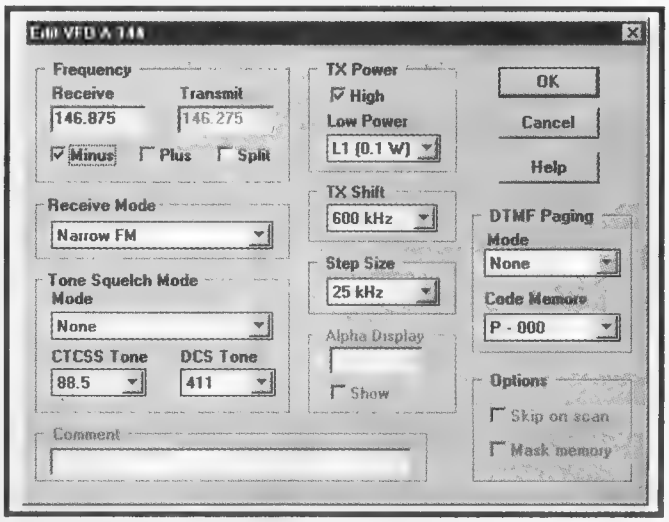


The ADMS-1C Memory Channels screen.



The ADMS-1C VFO A screen.

■ Technical

Technical Abstracts

Gil Sones VK3AUI
C/o PO Box 2175
Caulfield Junction VIC 3161

Tetrahedral Dipole Antenna

In *RadCom*, September 1997, Pat Hawker G3VA, in his *Technical Topics* column, features an interesting antenna design. It is a Tetrahedral Dipole Antenna which is a development of a centre fed bi-conical dipole. The antenna was originally described at the 10th International Conference on Antennas and Propagation (ICAP97) and published in IEE Conference Publication No 436 pp 1428-1430. The antenna was invented by Alan Boswell and Barry Peters of the GEC-Marconi Research Centre and is the subject of UK Patent GB 2302990 granted February 1997.

The antenna is a development of the bi-conical dipole and is centre fed. The antenna is built as a space-frame of 12 metal tubes in the form of two regular tetrahedrons mounted one above the other. The apexes are separated by an insulated platform to which the three tubes are attached to each side. The tubes are of copper or aluminium and are of good RF conductivity. The arrangement is shown in Fig 1.

The self supporting structure is held in place by insulating rods [B] in Fig 1. The central platform is made up of two metal plates [C] and an insulator [D] in the form of a sandwich. The metal tubes [A] are of equal length and, in the prototype, were 2.9 metres long. The feedline [F] is of 75 ohm impedance and is dropped vertically from the feed point and then run along the ground so as to minimise currents in the outer of the feeder cable. The support blocks [E] insulating the antenna from the ground are 100 mm high.

The resonant frequency of the prototype was 22.5 MHz and the bandwidth was given as 35% for a 2:1 SWR when fed with 75 ohm cable. The structure stood a little over 4.2 metres high as each tetrahedron is 2.1 metres high. At 22.5 MHz the measured feed impedance of the prototype was 68-j14 ohms. Increasing the height of the antenna above ground to 500 mm resulted in a feed impedance of 42-j32 ohms and the resonant frequency rose to 26.1 MHz.

A second implementation of the antenna was described and is shown in Fig 2. In this the rigid supports [B] of Fig 1 are replaced by insulated non-stretchable ropes [G] bracing the structure. The insulated support blocks are now at the corners.

The centre feed and support insulating sandwich is shown in Fig 3. The dimensions need to be such that it is mechanically sufficient for the structure.

The measured return loss and SWR are shown in Fig 4. The curves show both

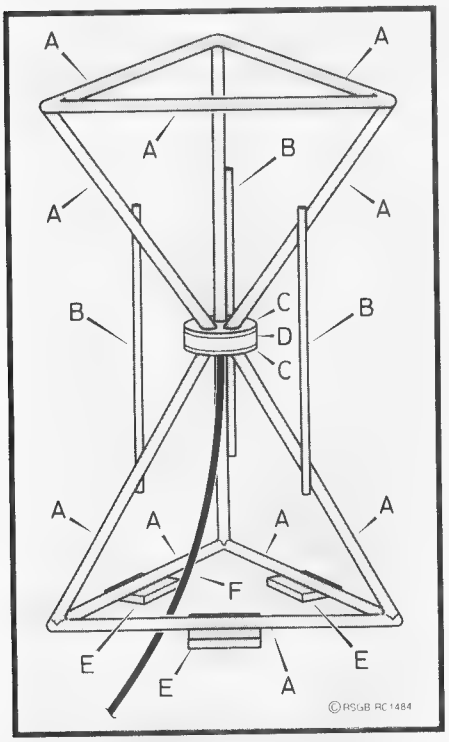


Fig 1 – GEC-Marconi Tetrahedral Vertical Antenna.

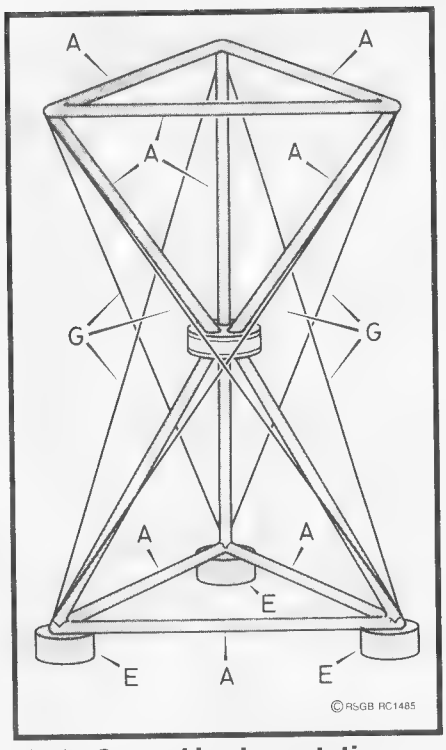


Fig 2 – Second implementation using insulating rope bracing.

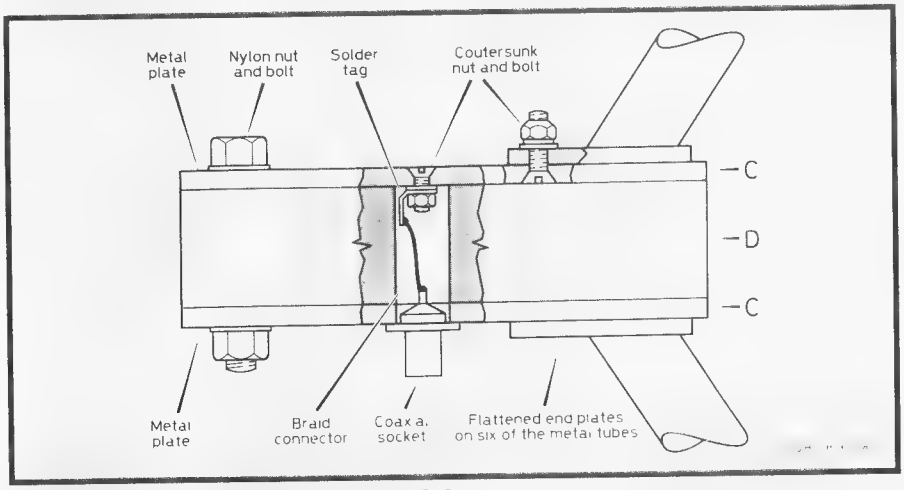


Fig 3 – Centre feed support sandwich.

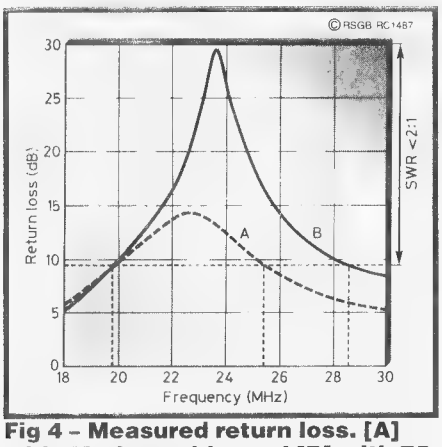


Fig 4 – Measured return loss. [A] with 50 ohm cable; and [B] with 75 ohm cable.

a 75 ohm feed and a 50 ohm feed. A return loss less than 9.54 dB represents an SWR better than 2:1. Return loss is preferred over SWR in many professional circles. The effect of a series one microhenry inductor in the feed is shown in Fig 5. The resonant frequency drops to 15.5 MHz with a 2.7 MHz bandwidth.

The antenna offers interesting possibilities for the 14 to 24 MHz bands with a simple ATU or maybe just a broadband matching transformer. It should be noted that there is the possibility of high RF voltages close to ground and that the radiated field could be high in the area close to the antenna. Accordingly, appropriate precautions should be taken to restrict access and only allow access to safe areas around the antenna. The power level used and the siting of the antenna will be of importance in determining the safe area.

Series Diode Strings

Series diode strings are often used in power supplies for valve linear amplifiers. Individual diodes do not have sufficient reverse breakdown voltage ratings and so we are forced to use a series string. These are often paralleled with equalising resistors and capacitors in an attempt to equalise the reverse voltages appearing across the individual diodes.

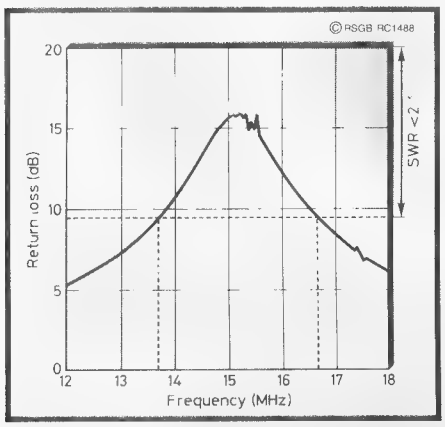


Fig 5 – Measured return loss with series one microhenry coil.

Recent items in both *QST* and the *Technical Topics* column of Pat Hawker G3VA in *RadCom* have thrown new light on series diode strings and the need for these resistors and capacitors. In *QST*, July 1997, Technical Correspondence from Ken Stuart W3VVN, ARRL Technical Advisor, clarifies the practice. This was followed up in *Technical Topics* in *RadCom*, October 1997.

When silicon diodes first appeared, the reverse failure was due to an arc-over which destroyed the diode. This unbalanced the string resulting in other diodes having their ratings exceeded and their subsequent demise. Resistors were used to swamp the internal leakage currents of the individual diodes and force equal voltage sharing.

Similarly, capacitors were used to swamp the individual diode capacitance and force equal voltages across individual diodes.

Unfortunately, it is hard to find resistors with an individual voltage rating greater than 300 volts. This complicates the construction of a series string for diodes with greater than a 300 volt reverse rating. Also, the capacitors used have a problem with momentary dielectric breakdown which can result in over-stressing a diode string.

However, all is not lost as diodes are now manufactured differently from those early diodes. They have a different reverse breakdown called a reverse avalanche. The diode behaves more like a Zener diode and this helps to prevent a reverse breakdown arc by limiting the maximum voltage across the junction. The arc is what caused the low voltage across one diode and the resultant over-stress of the other diodes.

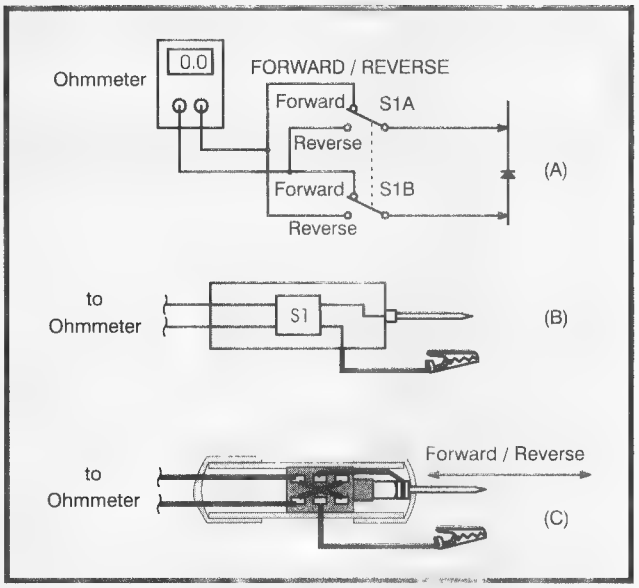


Fig 6 – Reverse-a-Probe.

The way to build a series string nowadays is not to use a parallel resistor and capacitor string, as these components are likely to be more trouble than the diode string. The cost of diodes has fallen and it is more sensible to simply put more diodes in series so that they are working very conservatively at a fraction of their reverse voltage rating.

You could search out diodes which are advertised as avalanche diodes but apparently most diodes are of this type. Diodes are very cheap nowadays so it makes a lot of sense to simply increase the number in the string so that the resultant PIV of the string has a good safety margin.

Reverse-a-Probe

A useful test probe idea appeared in the *Hints and Kinks* column of *QST*, August 1997, edited by Bob Schetgen KU7G. The probe is a test probe with an in-built reversing switch which was developed by A W Edwards K5CN.

A probe with an in-built reversing switch is very useful when testing semiconductors on a printed circuit board. Once the device has been located and resistance measured in one direction, it is simple to measure the reverse resistance without having to move the test probe. This simplifies testing as it is often difficult just to get the probes on the right points on a circuit board.

The circuit of the Reverse-a-Probe is shown in Fig 6A. A basic implementation with the switch mounted in a probe housing is shown in Fig 6B. A more elegant arrangement is shown in Fig 6C.

The arrangement shown in Fig 6C uses a push switch mounted in a probe housing with the probe tip mounted on the push arm of a push switch. The probe housing could be fabricated out of PVC or maybe a suitable pill bottle. With this arrangement you only have to push to reverse the polarity of the test connection.

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■ Electrical Safety – On the Secondary Side

Lloyd Butler VK5BR
18 Ottawa Avenue, Panorama 5041

(Originally published in the June 1997 Newsletter of The Adelaide Hills Amateur Radio Society)

These days we are fortunate to have Residual Current Devices (RCDs) to provide protection from shock in the event of touching the 240 V mains. These devices detect current unbalance between the two mains lines such as might be caused by human contact bypassing some of the current from one line leg to ground.

However, where equipment power circuits are coupled to the mains via a transformer, the RCD provides no protection against electrical shock from high voltage in the equipment itself. Most modern electronic circuitry is solid state, operating from low voltage supplies which present no danger. Working on such equipment tends to make one complacent concerning electrical shock and liable to overlook the possible additional presence of high voltage. However, much equipment still used by radio amateurs contains electron tubes operated from high DC voltage, so we should take care.

Many transceivers, although essentially solid state, use electron tube final RF power amplifiers. Such transceivers could utilise DC potentials in the order of 600 V and AC potentials at the transformer secondary even higher. A typical high powered linear amplifier might operate from a DC supply of several thousand volts. Even earlier types of valve radios have their dangers with DC potentials in the order of 250 V and AC potentials of 300 V to 400 V. Not to forget that the cathode ray tube in the computer monitor can be supplied with some rather dangerous potentials.

Precautions

So what precautions can we take? First of all don't put your fingers into the circuitry when it is turned on. If a test probe is to be inserted, hold the probe by its insulated end and keep the other hand away from the metal chassis. Of course, the whole idea is to prevent current passing through the main part of the body in the event of contact of high voltage by the one hand. In the days I worked on large transmitter racks we adopted the following procedure: stand on a rubber mat, only use one hand to carry out adjustment and keep the other hand well in the trouser pocket. Such transmitters were fitted with gate interlocks which turned off the high tension when any gate of the transmitter was opened. However, the gate switches often had to be bypassed to enable amplifier neutralisation and other active adjustments.

An obvious piece of advice is, if you have to work on the circuitry, make sure you turn off the power to it first. When equipment is connected by a power cord, I personally like to see the power plug removed from its socket before I put my fingers in. However, in spite of removing the power supply source, the equipment might still not be safe as there can be capacitors left charged up to a hazardous voltage.

A bleeder resistor connected across the high tension of a transmitter power supply to discharge capacitors is a good in-built safety measure and is, hopefully, incorporated in the equipment. However, you can never rely on a bleeder being fitted and, after first turning off power, it is a wise procedure to short out the high tension line with the metal shaft of an insulated screwdriver. If the energy stored is large enough you might burn a hole in the screwdriver but better this than endangering yourself. Even the more docile 250 V which could be stored in the filter capacitors of a valve radio receiver can make quite a zap when discharged by short circuit. It can give you quite a jolt if you happen to get across the un-discharged DC line yourself.

Now, you may know that the equipment has a bleeder resistor installed or has other load circuitry which discharges the capacitors. Even so, don't be too anxious to get into the equipment. The time constant of the circuit capacitance and the bleeder resistance might be long enough to hold the voltage to a high level for quite some time before it decays to a safe level. The short circuit screwdriver is still a good precaution even if the bleeder is installed.

Check First

If you have the slightest doubt about whether a circuit is electrically dead, then first check it with a voltmeter. However, if you must touch it, make the first touch with the back of the hand rather than grab it with the palm of the hand (of course, the other hand and the rest of the body should also not be in contact with anything else not insulated.) The reason for this procedure is that, if you get a shock, the current flow through the body actuates muscles and if the active conductor is in the palm of the hand, it might clench up so that you can't let go and release yourself from the circuit. This happened to me once, so I can speak from experience – that's another story.

If you play around with the inside workings of electronics and certainly radio transmitters, you should be aware of the latent dangers within. Hopefully, my few words of wisdom will help you stay alive.

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History

Ross A Hull – VHF Pioneer

John Martin VK3KWA
PO Box 2175, Caulfield Junction VIC 3161

The annual Ross Hull Memorial VHF-UHF Contest is currently under way. Ross Hull's name is well known, but who was he, and why is there a contest in his honour?

Ross A Hull was born in Melbourne in 1902. He developed an early interest in radio and was licensed as OA3JU (later VK3JU). At the age of twenty, he was the first Australian to hear signals from American amateurs.

Ross visited the United States in 1926, in his capacity as secretary of the WIA. The ARRL was quick to recognise his talents, and appointed him to the position of assistant technical editor for *QST*.

Ross returned to Australia in 1929 to take up the position of technical editor for *Wireless Weekly*, which was edited by his brother, A Galbraith Hull (*Wireless Weekly* is, of course, still with us – better known nowadays as *Electronics Australia*). But, within two years, he was back in the United States as Associate Editor of *QST*, a position which he held until his untimely death in 1938.

As associate editor, Ross spent much time in the ARRL laboratory, developing new equipment for use in W1AL, the ARRL's experimental station. His main interest was in the UHF spectrum which, in those days, meant anything above 30 MHz.

All of his early work was on the five metre band (56 – 60 MHz). But, in 1934, the FCC gave approval for amateur operation on any frequency above 110 MHz, and he began to experiment on two new bands, 112 MHz and 224 MHz. *(1)*

Ross A Hull

Improved Techniques

In the early 1930s, most amateur equipment was built in "breadboard" style: all of the components were mounted on a block of wood. Sometimes there was a front panel – also made of wood – but usually not.

This type of construction was quick and easy, but it left a great deal to be desired on bands like five metres. Component leads were too long, and the lack of any shielding caused instability and feedback problems.

Ross recognised the need for improved construction techniques: his projects were solidly constructed on metal chassis. Rather than mounting everything in a row, with long connecting leads, he often mounted valves sideways or upside down to make the lead lengths as short as possible. His projects were described in detail in *QST* and led to a significant improvement in the performance of homebrew equipment.

Ross also led the way in the development of receiving techniques. He popularised the use of band-spread tuning at a time when most receivers had very fast tuning rates and it was difficult to tune them accurately. He also popularised the use of superhet receivers. But superhets were expensive, and Ross was aware of the need to get the best performance from the smallest number of parts. Many of his projects used super-regenerative detectors which, at the time, were an excellent compromise between performance and cost. *(2, 3)*

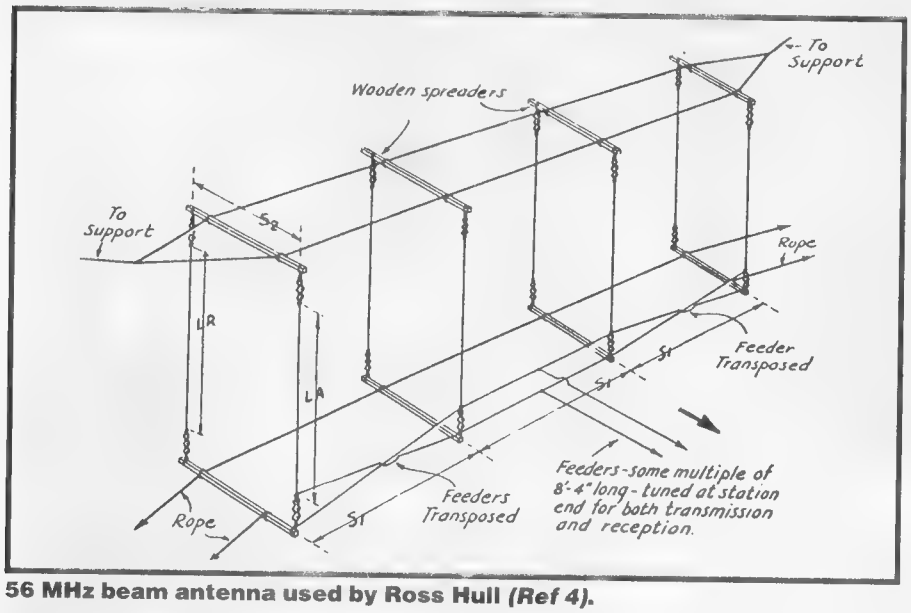
The typical five metre transmitter at the time was a modulated oscillator using a single valve. These transmitters were quite unstable and most stations produced as much FM as AM. By the mid 1930s there were serious QRM problems on five metres, as stations drifted, wobbled and splattered across the band.

Ross understood the need to improve frequency stability and reduce operating bandwidths. If transmitters could be made more stable, receiver bandwidths could be reduced. The benefits would be less interference and a much better chance of hearing more distant stations. Ross described transmitters using separate oscillator and amplifier stages to reduce frequency pulling and FM, and designed receivers with improved selectivity. *(2)*

Better Antennas

In the early 1930s the average five metre station was capable of working about 15 miles. But, in August 1934, Ross amazed his colleagues at *QST* by announcing that he had worked from Hartford to Boston – a distance of 100 miles. His secret was the antenna. At the time everyone used vertical antennas, but Ross put up a beam. It was a simple antenna by today's standards – four quarter-wave radiators fed in phase with four reflectors – but it made a startling difference to station performance. *(4)* The word spread and before long the distance records were tumbling.

This was a milestone: the beginning of the end for the "line of sight" theory of VHF propagation. We can still learn from it. Even today, more than sixty years later, a good many amateurs would be amazed if they threw out their verticals and put up a beam!



56 MHz beam antenna used by Ross Hull *(Ref 4)*.

The Big Discovery

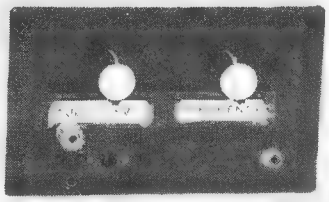
Ross had observed that signal strengths varied over time: a signal could be strong today and gone tomorrow – or it could be present in the morning but absent in the afternoon. To find the answer, he now turned his attention to a detailed study of VHF propagation.

In March 1935 he built the equivalent of a chart recorder. *(5)* He fed the output of a receiver to a meter, and focused the image of the meter needle through a slit onto a strip of photographic film. The film was drawn slowly past the slit by a gramophone motor. This enabled him to correlate signal strength with other data, and it became clear that signal variations were associated with changes in atmospheric pressure and moisture. This led to the discovery that VHF signals are refracted in the lower atmosphere, in much the same way as light rays.

This was a major scientific discovery, on a par with the discovery of ionospheric reflection on HF frequencies. But it was made by an amateur with no scientific training, using home-made equipment.

Ross published his findings in *QST (6, 7)*, and they led to a flurry of experimental activity and another dramatic increase in VHF record distances. Within a short time, five metre contacts were being made half way across the country – a far cry from just a couple of years before, when even the most die-hard experimenters thought that VHF would never be useful for anything other than chatting across town.

Ross applied the same techniques – stable oscillators and beam antennas – to the 112 and 224 MHz bands. As early as 1934 he had succeeded in working over 75 miles on 224 MHz. *(8)* As more amateurs adopted his techniques, it was



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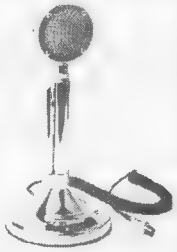

It's time to reach for the soldering iron! At left top is an audio filter project by Harold Hepburn, VK3AFQ, which we present for you this month. We also dive into history to test the dear old Astatic D104 microphone — but guess what? We tested a *new* one! It seems nobody thought to tell 'em to stop making them, so...

January's R&C has lots of great features of interest to amateur radio operators. Here are some of them...

- **REVIEW: Shack supplies. They're all made here, both linear and switch-mode. Are they any good?**
- **ANTENNAS: We have not one but *three* antenna project stories this month. One may suit you...**
- **REVIEW: ADI AT-200 two metre FM hand-held. Well, no, it's not a big brand — but that doesn't stop it!**
- **MACQUARIE ISLAND: Tom Stokes, VKØTS, spent a year in a true wilderness. He concludes his report.**
- **COMPETITION: You could win a great new Icom IC-40S or a Magellan 12-channel GPS receiver!**
- ***As usual, we have our three DX columns, mods and more... the best stories and regulars every month!***

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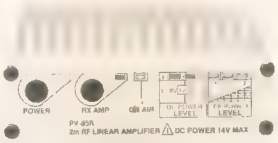

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A rugged, Australian-made vertical antenna designed to cover the 51 to 54MHz range, with minimum SWR around 53MHz. Built using high tensile T81 grade aluminium, it's just 2.9m long with a sealed base section and 100W minimum power rating. Complete with mounting hardware.

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D 1375

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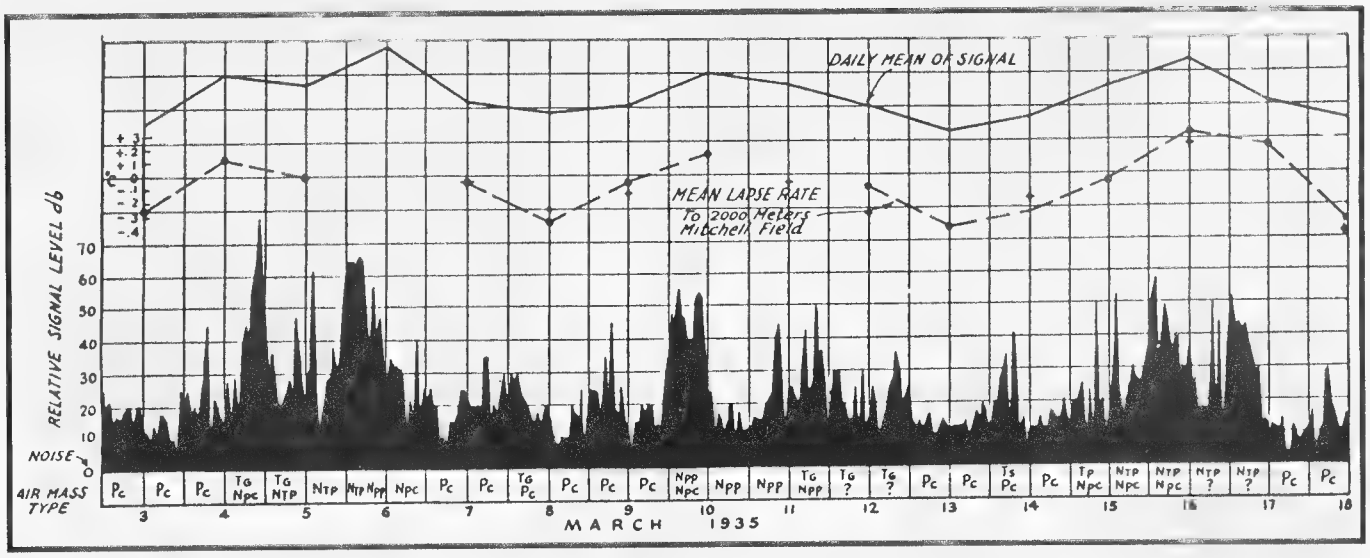

Chart showing direct correlation between atmospheric lapse rate and the strength of received signals *(Ref 6)*.

not long before the 112 and 224 MHz bands started to deliver the same kind of DX that had been achieved on 56 MHz.

Ross was a man of many talents. Apart from his amateur radio experiments, he was a talented pianist, artist and photographer. His interests also extended to astronomy – he built several reflecting telescopes – and to radio controlled model aircraft.

He was particularly interested in television, and caused quite a stir when he received good pictures from the experimental television station operated by NBC in New York, 100 miles away.

Sadly, it was his interest in television that was to bring a sudden end to his life on 13 September 1938. He had built a television receiver which had its power supply in a separate cabinet underneath the table. He reached under the table to turn on the power switch, and was electrocuted by the 6000 volt CRT power supply. So ended the career of one of the most capable and intelligent experimenters in the history of amateur radio.

Nobody knows what Ross may have achieved if his life had not been cut short. If he were still alive today, no doubt he would still be trying to push the frontiers even further: better techniques, better antennas, higher frequencies, and – above all – greater distances.

References

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WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of November 1997:

L21064	MR C P MANN
L21065	MR A GHAZANFAR
L21066	MR S N WALKER
L30967	MR J REARDON
VK1WN	MR W R NORRIS
VK2CAT	MR G RYAN
VK2DAO	MR D L CRAIGIE
VK2ICV	MR N HACKO
VK2IKY	MR D B REED
VK2ILC	MR R E RANDALL
VK2JBH	MR J B HERDEN
VK2KWA	MR W R ALFRED
VK2XCI	MR N J MCMILLAN
VK3VDP	MR D PENDERGAST
VK4KGP	MR D J HOLDER
VK6KAR	MR D J GRIMBLE
VK6NGW	MR G B WHITE
VK6NZ	MR J J CUNLIFFE
VK6PL	MR P H LONG

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Amateur Radio Annual Index 1997

A lot of material was published in *Amateur Radio* during 1997, including amateur radio news, members' experiments, construction projects, experiences and special interest columns. If you see an item in this annual index, and cannot locate the relevant copy of *Amateur Radio*, back issues of the magazine are available from the Federal Office to current WIA members at $4.00 each, postage paid to anywhere in Australia.

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■ History

A Man of Vision

An Early Wireless Experiment in Western Australia (and the experimenter)

Dave Hanscomb VK6ATE.
PO Box 39
Quinn's Rocks WA 6030

In looking back through the history of wireless in Australia, at the turn of the century (just before Federation) we find mention of such eminent experimenters as F H Leverrier who carried out radio experiments in Sydney in 1900, and H W Jenvey who, in April 1901, transmitted a wireless signal across Port Phillip Bay (later making contact with HMS St George, an escort ship for SS Ophir conveying the Duke and Duchess of York to Australia for a State visit). Incidentally, on board another escort, HMS Invictive, was a young telegraphist on his first voyage, George A Scott, who was destined to become Radio Inspector for Western Australia in 1918, but that's another story! W P Hallam and "Pop" Medhurst (Tasmania) also made contact with HMS St George.

However, very little (if any) mention is made of an earlier experiment carried out some 2500 miles (4000 km) to the west, in Western Australia.

The "WIA Book Vol 1" records: *"Oct 11th (1899) G P Stevens (GPO Telegraphs Branch) conducted wireless telegraphy experiments between the Royal Yacht Club and a police launch on the Swan River, WA."*

What was the purpose of these experiments? And what of the results?

To understand the situation, it is necessary to digress somewhat. Rottnest Island, only 18 km west of the port of Fremantle, is one of Western Australia's best-loved summer playgrounds. But it hasn't always been a fun place. Last century it was a prison for Aborigines, as well as having a lighthouse and pilot station to guide ships away from the dangerous reefs.

As a ship got close to the island, it would signal the pilot on Bathurst Point. He would then sail out, board the ship and steer it safely to Fremantle. Communication was mainly by boat but, if someone was sick and needed a doctor, then the people on Rottnest had to fly huge flags during the day, or light a bonfire at night, to get their message across.

In 1879, a heliograph was introduced to exchange messages between Rottnest and Fremantle. The only communications link of its kind in the entire Australian telegraph system, it used mirrors and sunlight to flash Morse-code messages. Of course, it only worked when the sun was shining; on cloudy days, and at night, it was back to the flags and fire!

It took a tragedy to bring the telephone to Rottnest Island.

In July 1899, the ship "City of York" was wrecked off Rottnest. Eleven men drowned and, because of a series of events, the authorities on the mainland were not notified until the following day. The people of Perth were shocked and demanded better communication with Rottnest.

The "WIA Book Volume 1" records that: *"On March 27th 1899, Marconi had successfully transmitted wireless telegraphy across the English Channel".*

And, on page 1 of "The Western Wireless" (Vol 4 No 76) of 29 September 1926 appeared the following article:

"WIRELESS TO ROTTNEST.
Twenty-Seven year old experiments

"Australian experimenters during recent weeks sent thousands of words through the ether to American 'Hams'. The percentage of error was very low, and the amount of power used was, in many cases, less than that used in an ordinary household electric light. The Trans-Pacific Tests stand in an interesting light when compared with some of the early tests made by the pioneers of the science.

"One such early experimenter, to whom the thanks of the younger generation of experimenters is due, is Mr G P Stevens, one-time manager and electrician for the State Government Postal and Telegraph services.

"An interesting document dated October 26th 1899, and headed: 'EXPERIMENTS BY THE TELEGRAPH BRANCH OF THE GENERAL POST OFFICE TO ASCERTAIN THE PRACTICABILITY OF ESTABLISHING COMMUNICATION BY THAT SYSTEM BETWEEN ROTTNEST ISLAND AND THE MAINLAND' was presented to both Houses of Parliament, 'by his Excellency's Command'.

"This document reads: 'Memorandum for the Superintendent of Telegraphs'

"With the co-operation of the Police Department, and assisted by Mr Knox of the Telephone Branch, and Messrs Rossiter and Phillips, I carried out a series of experiments on the 11th inst with a view to testing the distance to which it was possible to signal without wires with the apparatus at present at my command, viz a six-inch spark coil as a transmitter, and unexhausted coherers, made in our own workshops, as receivers. The results were not so satisfactory as I had anticipated, but were quite sufficient to confirm me in my opinion that, with proper appliances, the system would be quite reliable, and meet all the requirements for conveying shipping intelligence to and from Rottnest.

"Using a vertical conductor suspended from the flagstaff of the Royal Yacht Club, at a height of 40 ft (12 metres) *above water level, and a similar conductor supported by a temporary mast on the police launch, we commenced signalling across the water at 200 yards* (180 metres) *then, putting the launch under slow steam, the distance was gradually increased, communication being kept up all the time, until at about three-quarters of a mile* (1.2 km) *the coherers failed to respond. Careful tests were made, and all possible variations of spark length tried, but no effective waves could be detected outside the three-quarter mile radius. By means of flag signals, the launch was instructed to return slowly, and immediately it entered the magic circle, the electric waves were again picked up, and steadily increased in volume as the launch approached; the Morse code being readily read throughout.*

"Tests were also made to ascertain if the law governing the distance to which signals could be sent with a given length of vertical conductor, as stated by Mr Marconi and other workers in England would hold good for the conditions tried

here: and I am pleased to say that the conclusions arrived at coincided exactly with those obtained with the more perfect apparatus employed in the experiments carried out recently in England and France, that is to say we find that, other things being equal, the distance over which it is possible to signal varies with the square of the height of the vertical conductors. Applying this law in our own case, and assuming that perfect signals were obtained at half a mile, with conductors 40 feet high, we should require conductors 160 feet (48 metres) *high to work eight miles, and 196 feet* (58.8 metres) *to work 12 miles* (19 km) *or, practically, to establish communication between Rottnest and the Mainland, it would be necessary, with the apparatus available in this colony, to erect masts at each station at 200 feet* (60 metres) *high: this would entail considerable expense: and knowing that equal or better results would be obtained with masts of 40 or 50 feet high by using apparatus supplied by Marconi's Company, I would not recommend attempting long distance experiments before communicating with that Company.*

"The fact that our distance limit was reached under a mile does not, in the opinion of myself or my co-workers, in any way tend to discredit the reports of the success of Mr Marconi, or shake our confidence in the utility of the system as a cheap and reliable means of signalling between ships at sea, or for coastal service between the mainland and isolated positions.

"The short distance over which we have been able to signal, as compared with the latest cable advices from England, can easily be accounted for when we remember that in all Mr Marconi's experiments, he has used, at his transmitting station, a ten-inch spark coil, which would emit electric waves of far greater amplitude than our six-inch coil: and in the matter of coherers (the sensitive receiving tubes) he has had the advantage of having at his command the skill of first-class scientific instrument makers, while we have been unable to procure the assistance of an ordinary glass-blower: and notwithstanding that Mr Knox succeeded in constructing an exhaust pump that did its work admirably, when it came to sealing off, with the wires and pole-pieces in place, it was found that the glass tubing procurable here was not suitable, the expansion of the wire that passed through the sealed ends of the tube caused minute cracks that rendered it impossible to secure a reliable vacuum, which, according to expert opinion, quadruples the sensitiveness of the tube.

"Apart from these drawbacks, which we could of course overcome by expending a few pounds, it would be unreasonable to suppose that we, with the very meagre description of the system available through the scientific papers, could, in a month, attain the perfection of detail that has taken Mr Marconi, assisted by some of the cleverest electricians in England, five years to accomplish.

"On the whole, the results attained here fully confirmed the practicability of signalling without wires, and the reports to hand clearly indicate that its sphere of usefulness is extending every day. Writing in the "Navy and Army Illustrated", giving details of the trials of the system during the recent naval manoeuvres, Commander E P Statham RN, in his closing remarks, says: 'Reaching the convoy at four o'clock one afternoon, and leaving it and the other cruisers in charge of the senior captain, the 'Europa' hastened back towards another rendezvous, where the Admiral had intended remaining until he should hear whether the enemy had found and captured the convoy. But scarcely had she got well ahead of the slow ships, when the 'June' called her up, and announced the Admiral coming on to join the convoy. The 'June' at this time was fully sixty miles distant from the 'Europa'. Now imagine a chain of vessels, sixty miles apart: only five would be necessary to communicate some vital piece of intelligence from a distance of 300 miles (about 480 km), *receive and return their instructions, and act immediately, all in the course of half-an-hour or less.*

"This is possible already. Doubtless, a vast deal more will be done in a year or two, or less: and meanwhile, the authorities should be making all necessary arrangements for the universal application of wireless telegraphy in the Navy. The outfit is not expensive – 120 pounds would probably fit up any ship, and it is sure to become cheaper in time.

"In the face of reliable reports of this kind, I naturally feel somewhat surprised and disappointed that my suggestion to adopt Marconi's system for the Rottnest service did not meet with the support I anticipated from the Government's consulting engineer (Sir William Preece) who, strange to say, had, in a paper read before the Society of Arts prior to his having been consulted by our Government, distinctly stated that there could be no question of the commercial value of Marconi's system for such services as were contemplated in my suggestion.

"We shall, however, find it necessary, I think, in the very near future, to establish a 'wireless telegraphy' station at Rottnest, in addition to the cable service, for the purpose of communication with passing or approaching ships: and the experience gained in our late experiments will then, I hope, bear fruit.

"I desire to express my grateful thanks to the Postmaster General for so readily granting me a free hand in conducting these experiments. The whole subject, as you are aware, is surrounded with a certain amount of mystery: indeed, I found, at the outset, that to succeed at all, it was necessary to draw heavily on our own inventive resources, which has transformed what might otherwise be considered tedious work into a pleasant and fascinating break in my office routine.

"I am sure the Postmaster General will also recognise that time so spent is by no means wasted, as the knowledge gained must tend to the general efficiency of the Department. Should he desire at any time to have the system practically demonstrated in a suitable room to members of the Government, or others interested, it is only necessary to intimate his wish to have it carried out.

"I cannot conclude without again referring to the valuable assistance I have received from Mr Knox, Inspector of Telephones, Mr Phillips, Batteryman, who has become quite an expert in the construction of secondary batteries, and especially Mr Bosser, of the Mechanical Branch, who, besides making any apparatus that wasn't in stock, has helped me out with many knotty problems that I could discuss with him as an intelligent electrician."

G P Stevens
Manager and Electrician

It would appear that, following the tragedy of the "City of York" he had either taken on the task of investigating "wireless" for improving communication between Rottnest and the mainland, or had been asked to do so by the

Government of the day 'by His Excellency's Command'.

It was not to be. Despite his faith in the value of wireless, his report appeared to bear no weight with the Government of the day. For, by March 1900, the WA State Government had laid a single circuit submarine cable from Cottesloe to Rottnest, and connected it to a small exchange on the island. Three years later it was handed over to the newly-formed Fremantle Port Authority (in 1936 it became the last pre-Federation exchange to be taken over by the PMG Department).

Here, surely, was a man of vision, It seems incredible that, just over six months after Marconi had crossed the English Channel by wireless telegraphy, that someone half a world away should have confidence in the value of wireless. It seems that he had anticipated by about a decade what would become the Coastal Radio Service.

In reading this, one can only wonder at the skill of Stevens' assistants in making the required components. Surely there were not many components held in stock!

How long had it taken for "the scientific papers" to reach Perth? Just how much was the "meagre description"? Had Stevens and/or the Department carried out tests before? Were they to do so again?

It seems a pity that, after all that effort, further wireless experiments would have been abandoned!

Who was G P Stevens? What did he achieve? What became of him?

Here is what I found out. George Phillip Stevens was born in England, at Keynsham, Somerset on 24 June 1861. He was the youngest of the family which arrived in Western Australia in 1868 when be was only seven years old. After some years schooling, he entered the Post and Telegraph Department on 13 April 1874 as a messenger boy at Toodyay, at the ripe old age of 13 years! Two years later he was transferred to Esperance Bay as Officer-In-Charge, pending the completion of the Intercontinental Telegraph Line. At the age of 17, he was appointed station master at Bremer Bay and, in 1882, when only 21 years of age, he was promoted to be Station Master and Customs Officer at Israelite Bay. Four years later he was transferred to Eucla, on the South Australian border.

Eucla was then a most important link in the telegraph system which served to annihilate the distance between East and West, but since fallen from its high estate owing to the installation of the wonderful "Wheatstone" system. He remained at Eucla for ten years, from here controlling the traffic during the boom days of the gold fields. He was recalled to Perth in 1896 to occupy the position of Manager and Electrician to the Telegraph Department.

It would have been in this capacity that, on 11 October 1899 he was to carry out the experiments mentioned previously. He was transferred to the Commonwealth Service in 1901, subsequently being promoted at a higher salary to be Electrical Engineer. During his tenure of this office, he incurred the displeasure of the permanent and political heads of the Department by strenuously opposing the indiscriminate use of condenser telephones, on the grounds that they seriously interfered with the efficiency of the telegraph service. He was subsequently charged with incompetency, the chief indictment being waste of money through his advocacy of an additional telegraph line to the gold fields at a cost of 3,900 pounds and the employment of more telephone attendants than was considered necessary.

A special board was appointed to inquire and report as to his fitness to satisfactorily carry out the duties assigned to him. The Board of three included a junior officer from Sydney and a mail officer possessing no technical knowledge. The officer upon whose report the inquiry was based was present watching his case throughout the investigation, but Mr Stevens had neither departmental nor legal representation.

After six weeks, occupied chiefly in seeking weak points in the administration, the Board reported unfavourably, and Mr Stevens was informed that he would be transferred to the position of Comptroller of Stores. Simultaneously with this, it was announced that the junior member of the Board would succeed him as Electrical Engineer!

Mr Stevens protested against the decision, claiming his right to be retired under Section 6 of the State Superannuation Act, and in this he was supported by the State Government and Sir John Forrest, the latter characterising his treatment as unparalleled in the annals of the British Civil Service. Obtaining Leave of Absence, Mr Stevens proceeded to Melbourne to personally urge his claim, which was ultimately granted, and he retired in 1906 with a pension reflecting his 32 years service.

Probably about the turn of the century he married. It was noted (The Cyclopaedia of Western Australia Vol 1 (1912)) that he had four sons and five daughters; was that the extent of his offspring?

In 1908 he became secretary of the Civil Service Association, and held the position until he retired in November 1932.

Mr Stevens' interests were not confined to service matters. He was a member of Claremont Municipal Council for over 25 years, and held the office of Mayor during the four years of the 1914-18 war. He devoted a deal of his time to Freemasonry, and was formerly one of the foremost bowlers in the state. He captained the champion Four of the State in 1906 and won the association singles in 1910, in which year he was a member of the team of bowlers sent from this State to the Commonwealth Carnival He also had the honour of being one of the four selected captains to play in the Test Matches against the first visiting team from the Eastern States.

A member of the West Australian Historical Society since its inception in 1926, he was later elected to the council and afterwards became a vice president. Right up to the time of his last illness, he regularly attended the Society's meetings and, after the reading of any paper, his wealth of information on State history enabled him to speak authoritatively on relevant incidents.

Although not a recognised "experimenter", his association with telegraph may well justify our description of him becoming a "Silent Key" at the age of 80 years, on 20 November 1941.

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The CLARA Gala or CQ Polar Bears

Gwen VK3DYL

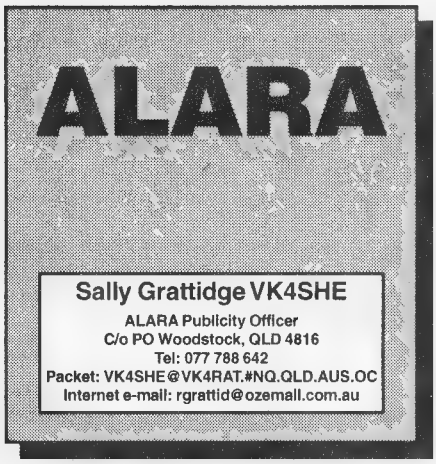
I headed over to the Canadian YLs' Convention near Toronto last September, with a list of things I wanted to see and do like catch up with HF and e-mail friends, see some polar bears, icebergs, the Northern Lights, Niagara Falls and a Newfoundland dog, as well as eat fresh crab and lobster in the Maritimes and experience the wonderful Fall colouring. I didn't anticipate having my first helicopter ride, however!

The trip was arranged around the CLARA Gala, held to celebrate CLARA's 30th Birthday, so as to catch up with YL friends and meet others. I particularly wanted to meet Minnie VE3DBQ, a white stick operator and VP of CLARA, and catch up again with Lois WB3EFQ, who was driving up from Pennsylvania, and Elizabeth VE7YL coming across from Vancouver. Dave ZL1AMN and Aola ZL1ALE were to be there, also Raija SM0HNV, all of whom were at the ALARAMeet in Perth, and I was looking forward to meeting Ruth IT9ESZ, whom I had spoken to on a number of her DXpeditions, plus some of the VE girls who had been of great help to me on e-mail in planning my trip.

Eight different countries were represented by 47 YLs, 20 OMs and a guide-dog-in-training, so there was much laughter and chatter over the three days. The buffet style meals were superb and there was entertainment each night (I must confess I preferred to sit and try to chat rather than line dance!). Eight members of ALARA attended, though I was the only home-grown one!

Prior to arriving at the Gala, I had seen a little of Nova Scotia, Prince Edward Island and Newfoundland. Therefore, I was able to cross the fish and the dog off my list but I was too early for the Fall colours. Thanks to a friend on the Island, I kept an early morning 40 m sched with some of the guys back home. We bought some live lobsters one night but I refused to carry the bag home (they wriggled!) I didn't refuse to eat them later, though! I was even taken to a White Elephant Sale and the bargains looked just the same as here.

I went on a 12 day cruise up the coast of Labrador, and that took care of the icebergs and Northern Lights – some whales, dolphins and puffins were thrown in as a bonus! The ship I travelled on was a coastal working vessel which stopped at about 48 different settlements en route loading and off-loading cargo, most of which was timber and fresh produce, though at times we carried the odd dog, skidoo and boat. One person even had his whole new house delivered to him in bits, including the bed, heater and TV set.



Of the 19 passengers on the cruise, six were radio amateurs! This enabled me to have my one and only 2 m contact – from one side of the ship to the other. We made our own entertainment at night – three of the crew played guitars whilst we sang. We went through the Newfie ceremony of "kissing the cod" (a dried cod-fish, if you please!) and downing a tot of Screechers rum. We all told the worst jokes we could think of, and, to cap it off, King Neptune came aboard one night even though we weren't anywhere near the Equator!

The further north we went, the colder and more barren it became and I certainly didn't envy the people who lived out their lives in the small fishing settlements dotted along the coast. However, the folk we met on our numerous trips ashore were very friendly. So were the mosquitoes! The sunsets were awe inspiring whilst later the Northern Lights danced across the skies.

Niagara Falls impressed me in spite of the other tourists. My hotel room overlooked the Falls so I had a good view of them at night when they were illuminated in different colours. In spite of being issued with a plastic coat, I got soaked on a trip on the *Maid of the Mist* to the foot of the Falls – the spray and noise were unbelievable.

Last, but not least, I went up to Churchill, Manitoba, on the shores of Hudson Bay, looking for the polar bears who gather there at this time each year waiting for the ice to form on the Bay so they can go out hunting seals, etc. Some bears arrive a bit early and tend to wander round the town and the rubbish dump looking for alternative food.

To counter this, there is a curfew at night for all children to be indoors whilst Polar Bear Surveillance teams patrol the streets. Any bears caught in or near the town are put in gaol! Truly, there is a large corrugated tin building on the outskirts of town where the bears are put in separate cells and kept there until the ice forms and they can be lifted out to it by helicopter. Each bear caught is scientifically tagged so an accurate record can be kept of their age and wanderings.

To see the bears in the wild, I spent a couple of days travelling on the Tundra in a Tundra Buggy – like a large bus mounted on 6 ft diameter wheels which slowly chugs its way across the tundra regardless of the terrain, be it lake, swamp, rocks or whatever. We found three bears lazing round in one particular area and they obligingly spent a little time playing with each other – they even tried to play with us in the Buggy!

To see more bears I made my first helicopter flight and it wasn't as bad as I'd expected! We saw seven more bears, once again all just lying around waiting for the ice. No snow, though the nights were down to minus two degrees C and the days up to plus two. I don't think the bears would have had much longer to wait to go hunting!

For those who want to "chill out" this year, the Norwegian YLs are organising a YL Meeting at Longyearbyen on the island of Svalbard (JW-land to all you DXers!). It is situated north of Norway above the Arctic Circle, at 78 degrees, and is also home to polar bears. Hopefully I'll be there in spite of the fact that I hate the cold.

New Member

Gwen also scored another American member for ALARA from the Gala – Carol WD8QDG. Our Sponsorship secretary, June VK4SJ, is sponsoring Carol herself. Welcome to ALARA, Carol.

New Callsigns

A new H call on the air is Teri VK4HYL. Teri achieved her licence in six months, starting with no previous knowledge of electronics. She also moved house and had a baby while she was studying. Not a bad effort, Teri.

Distinguished

Last year Mary VK4PZ and OM Gordon VK4GM received WIAQ Distinguished Service Awards, presented to them by Councillor Peter Dawson. Congratulations Mary and Gordon. **ar**

Have you advised the ACA of your new address?

Awards

John Kelleher VK3DP
Federal Awards Manager
4 Brook Crescent, Box Hill South, VIC 3128
Phone (03) 9889 8393

I wish all my readers a very prosperous New Year. Looking back, propagation has certainly been in the doldrums. It has been frustrating trying, not only to work some DX, but more so trying to find new DX. I am in that group that has passed the 300 countries mark, looking to push on, and to work those most elusive few remaining.

Listening on the bands, I find that 20 and 40 metres are now beginning to hum faintly, especially after 0700 UTC. There has also been spasmodic activity on 15 metres. I have also heard operators talking about a particular Net operating on 10 metres. Speaking personally, I have worked Europe and North America on both 20 and 15 metres.

Questions and Answers

The fees for JARL Awards have been increased to $US16.00 or 12 IRCs.

The WIA sponsors it's own DXCC Award. It is not necessary to bundle up 100 plus QSL cards and send them to a prescribed overseas destination, at a horrendous cost. The rules for application are identical, as is the prestige. My records show a significant percentage of overseas members of the WIA DXCC.

To make my job a little more enjoyable, could I suggest that, when you upgrade, or change your call sign or address, you take the time to let me know so that my records can be kept up to date.

I have also had feedback about local awards. It seems that there are quite a few that are alive and kicking, but the organisers seem to be backward in coming forward with details of the awards that they have on offer.

Switzerland – The Helvetia Award

Confirm contacts with all 26 Cantons and half Cantons since 1 January 1979. This is a beautiful, multi-coloured award showing the flags of each Canton on its border. Issued in four categories: (1) phone, CW or mixed; (2) all CW; (3) RTTY; and (4) SSTV. Separate awards for HF and any single VHF/UHF band. Cards must be sent, together with QSO information, to the sponsor. The award is free, but sufficient IRCs should be sent to cover the cost of returning your cards.

The HF manager is Kurt Bindschedler HB9MX, Strahleggweg 28, 8400 Winterthur, Switzerland. The VHF/UHF Manager is Rudolph W Heuberger HB9PQX, Buchserstrass 7, CH-5034 Suhr, Switzerland.

The Cantons are as follows:
AG Argau
AI Appenzell Inner Rhoden
AR Appenzell Outer Rhoden
BE Berne
BL Basle Country
BS Basle City
FR Fribourg
GE Geneva
GL Glaris
GR Grisons
JU Jura
LU Lucerne
NE Neuchatel
NW Nidwalden
OW Obwalden
SG St Gall
SH Schaffhausen
SO Solothurn
SZ Schwyz
TG Thurgau
TI Ticino
UR Uri
VD Vaud
VS Valais
ZG Zug
ZH Zurich

The Helvetia Contest, held annually on the last full weekend of April, is an excellent time to work the rarer Cantons as portable operations often take place.

Thailand – The Siam Award

Contact and confirm 10 HS stations. No time limit. SWL OK. GCR and 10 IRCs for surface mail, 15 for airmail, should be sent to Hans D Hollstein HS1BG, Awards Manager, 86/1 Sukhumvit soi 23, Bangkok 10110, Thailand.

Greece – RAAG Series

General requirements: Fee for each award is $US5.00 or 10 IRCs. Endorsements are four IRCs. Apply to RAAG Award Manager, PO Box 3564, 10210 Athens, Greece.

Awards are issued for SSB, CW, mixed or single mode.

Athenian Award

Issued for contacts with 25 stations in the Athens area. Issued for any mode in the following three classes:
1st class: QSOs on 160 and 80 metres;
2nd class: QSOs on 40 and 30 metres; and
3rd class: QSOs on other bands.

Endorsement stickers for each 25 new contacts.

Greek Islands Award

Work and confirm 10 contacts in at least three groups of the Greek Islands as listed below:
1. Crete
2. Dodecanese
3. Ionian
4. Cyclades
5. Sporades
6. Euboea
7. Lesbos
8. Khios
9. Thasos-Samothraki
10 Ikaria-Limnos

Mixed mode or single band endorsement stickers for every ten different islands.

RAAG Award

For contacting stations located in Greece after 1 January 1975. Submit verified list of contacts with at least seven Greek stations from any of the nine call areas SV1 to SV9. No band or mode limitations.

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Contests

Peter Nesbit VK3APN
Federal Contests Co-ordinator
PO Box 2175, Caulfield Junction, VIC 3175
pnesbit@melbpc.org.au

Contest Calendar Jan – Mar 98

Jan 3-4	ARRL RTTY Roundup	
Jan 9-11	Japan DX CW (Low Band)	
Jan 10-11	VHF/UHF Field Day Contest	(Dec 97)
Jan 17-18	HA DX CW Contest	
Jan 23-25	CQ WW 160 m DX Contest	(Dec 97)
Jan 24-25	REF (France) CW DX Contest	
Jan 24-25	UBA (Belgium) SSB DX Contest	
Feb 7-8 Y	U DX Contest	
Feb 14	Asia-Pacific CW Sprint	
Feb 14-15	ARRL DX CW Contest	
Feb 14-15	PACC CW/SSB DX Contest	
Feb 20-22	CQ 160 Metre SSB Contest	(Dec 97)
Feb 21-22	RSGB 7 MHz CW Contest	
Feb 21-22	REF (France) SSB DX Contest	
Feb 21-22	UBA (Belgium) CW DX Contest	
Feb 22	High Speed Club CW Contest	
Mar 7-8	ARRL DX SSB Contest	
Mar 7-8	DARC 10 m Digital Contest	
Mar 14-15	Commonwealth Contest (CW)	
Mar 21-22	WIA John Moyle Field Day	
Mar 21-22	DARC HF SSTV Contest	
Mar 21-22	Bermuda Contest	
Mar 28-29	CQ WPX SSB Contest	

A reader recently asked about the terms "busted callsigns" and "busted QSOs", as mentioned in the rules for the recent Stew Perry 160 m contest. He said, *"Having never encountered the terms before, could you reveal the meaning of these colourful Americanisms in the next available column?"*

I must confess that, after wading through contest rules year in and year out, one becomes somewhat blasé about the jargon, of which there is plenty. We casually talk about log duping, ten minute rules, the "usual declaration" and so on, not realising that to many, these terms may be rather obscure.

To help demystify the process, some years ago I devoted a whole column to explaining the various contesting terms, and outlined what the newcomer should expect to have to do. Perhaps it is time for a repeat

Returning to the reader's question, a "busted callsign" is one which an entrant includes in his log, but is later found to be wrongly copied or unverifiable by the contest manager, and therefore disallowed. Similarly, a "busted QSO" is one where the exchange or other information is wrongly copied, and the QSO is disallowed as a result.

In the past, some of us have found that errors are often treated all too leniently by the log checkers, leading a few contesters to put speed ahead of accuracy. With the increasing use of electronic submission, all that is set to change. For example, just the other day I received a press release from CQ-Contest, outlining their new preferred way of receiving logs electronically. The information is repeated later in this column Personally, I think electronic log submission is a marvellous step forward, and can't wait for it be adopted as the usual method of entry for other contests as well. I have always detested all the fiddling around with reformatting, printing logs out, messing around with envelopes, and last-minute dashes to the post office. In contrast, e-mail is quick, cheap and efficient

The benefits are not confined to entrants, as electronic submission also helps the contest manager. Electronic logs are tailor made for computer cross-checking, removing the need to manually wade through thousands of QSOs in paper logs, laboriously cross-checking one to another. Work is under way to standardise the formats for electronic logs, and I'm sure it won't be long before we see many contests employing this method of adjudication.

Of course there are many contesters who do not own computers, or are not connected to the Internet. Their continued participation in contests is vital, and their logs will always be gratefully received.

What will this do for contesting? More comprehensive checking will probably cause average scores to come down slightly, due to busted QSOs (now where did I hear that term?). Fortunately, statistics show that most single operators have a fairly low error rate, certainly lower than the average multi-operator or multi-multi entry. At least we know the results will be more accurate in future and, as far as the individual is concerned, there will be a real incentive to improve one's own copying skills.

For information this month, thanks to 9V1YC, I2UIY, JE1CKA, LA9HW, PA3EBT, *ARRL*, *CQ-Contest*, *RSGB*, and the *High Speed CW Club*. Until next month, good contesting!

73, Peter VK3APN

Asia-Pacific Sprint

CW: 1230-1430z, Saturday, 14 February
SSB: 1230-1430z, Saturday, 13 June
CW: 1230-1430z, Saturday, 17 October

In this series of sprints, the object is for stations in the Asia-Pacific region to work as many stations world-wide as possible within two hours, on 20 and 40 m CW. Suggested frequencies are (CW) 7015-7040 and 14030-14050, and (SSB) 7060-7080 and 14250-14280 kHz

Output power is limited to 150 W. Exchange RST + serial number, and count one point per valid QSO. *The called station (usually the CQer) must QSY at least 1 kHz after a CW QSO, or 6 kHz after an SSB QSO.* The multiplier is the total number of prefixes, per WPX rules (ie each prefix once only, not once per band). Final score equals valid QSOs x multiplier. Post your log to: James Brooks, 26 Jalan Asas, Singapore 678787 postmarked within seven days, or e-mail an ASCII version to his new address at: *jamesb@pacific.net.sg* within 72 hours

Rules and results will also be distributed by an automated info-server. Send an e-mail to: *info-contest@dumpty.nal.go.jp* containing *#get ap-sprint.rule*

ARRL DX Contest

CW: 0000z Sat to 2400z Sun, 14/15 Feb
SSB: 0000z Sat to 2400z Sun, 7/8 Mar

There is always plenty of activity in this popular contest For this year only, to avoid clashing with several other popular contests, the CW section will run on the second full weekend in February (instead of the third full

weekend as usual). The phone section will run on the first full weekend in March.

The object is to work as many W/VE amateurs as possible on 1.8-30 MHz (no WARC). Single operator categories are: single band, all band, all band QRP max 5 W O/P, all band low power max 150 W O/P, and all band unrestricted. Single-band entrants who make contacts on other bands should submit logs for checking purposes.

Multi-operator categories are: single Tx, two Txs, and unlimited. In the single and two Tx categories, once a transmitter has begun operation on a band it must remain on that band for at least 10 minutes. Listening time counts as operating time. See *QST* or *www.arrl.org* for more comprehensive rules governing multi-operator entries.

Exchange RS(T) and a three digit number indicating approximate output power. W/VE stations will send RS(T) and state/province. Score three points per W/VE QSO. The multiplier is the sum of US states and District of Columbia (DC) (except KH6/KL7), NB (VE1), NS (VE1), PEI (VE1 or VY2), PQ (VE2), ON (VE3), MB (VE4), SK (VE5), AB (VE6), BC (VE7), NWT (VE8), YUK (VY1), NF (VO1), and LAB (VO2) worked to a maximum of 62 per band. The final score equals the total QSO points times the multiplier.

Entries with more than 500 QSOs must include cross-check (dupe) sheets. ASCII logs on DOS disk are welcome in lieu of a paper log. If using CT, send the CALLSIGN.ALL file (not the .BIN file). An official summary sheet or reasonable facsimile with a signed declaration is required with all entries.

Alternatively, logs can be forwarded via the Internet to *contest@arrl.org*, or anonymous ftp to *ftp.arrl.org*. Include your summary sheet file, making sure it includes all pertinent information (the rules do not mention if a signature is required for e-mail and ftp entries – due to the impracticality of a signature in these cases, it is probably safe to assume it is not).

Multi-operator entries must list all operators. Entries must be postmarked within 30 days after the last contest or they will be classed as check logs (no exceptions)! Entries received after mid-June will not make *QST* listings. Mark the envelope CW or Phone, and send the log to: ARRL Contest Branch, 225 Main Street, Newington, CT 06111, USA. Certificates will be awarded to the top scoring stations in each country and category, and plaques to the top world-wide and continental stations.

PACC CW/SSB DX Contest

1200z Sat to 1200z Sun, 14/15 Feb

This is a very popular European contest, with phone and CW held on the same weekend. The object is to work as many Dutch stations as possible on 160 to 10 m, excluding the "WARC" bands. Categories are single and multi-operator; SWL. Only CW contacts are eligible on 160 m. Stations may be worked only once per band, regardless of mode.

Exchange RS(T) plus serial number; Dutch stations will RS(T) plus a two letter province code. Possible codes are: DR FR GD GR LB NB NH OV UT FL ZH ZL. Score one point per Dutch QSO. Contacts must be confirmed by TU, OK or QSL. Final score equals the total QSO points times the total Dutch provinces worked from each band (max 72). Mail logs with summary sheet and declaration by 31 March to: Hans Timmerman PA3EBT, Nieuweweg 21, 4031 MN Ingen, Netherlands. Certificates will be awarded to the top scoring stations in each category and country, including second and third places where justified.

RSGB 7 MHz CW Contest

1500z Sat to 0900z Sun, 21/22 Feb

The object of this contest is to contact as many British Isles stations as possible on 40 m CW. Exchange RST plus serial number starting at 001; UK stations will add their county code. Oceania stations score 30 points per QSO, and the final score is the total QSO points times the number of UK counties worked. Include a summary sheet showing all standard details, plus a checklist if more than 80 QSOs are made. Send logs to arrive by 14 April to: RSGB HF Contests Committee, c/o S V Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF, England. Airmail is recommended, as late logs may be treated as check logs. Certificates will be awarded to the leading entrants in each overseas section.

High Speed Club CW Contest

0900-1100z and 1500-1700z, Sunday, 22 Feb

This interesting contest is organised by the High Speed CW Club, and runs on the last Sunday in February. Bands are 80-10 m, and categories are HSC Members, non-members, QRP 5 W, and SWL. Exchange RST + HSC number or serial number. Score one point per QSO with own continent, and three points for DX. Stations can be worked once per band and period. Each DXCC country per band counts as a multiplier. Final score equals points times multiplier.

Send logs within six weeks to: Frank Steinke DL8WAA, Trachenbergerstrasse 49, D-01129 Dresden, Germany. The HSC web site is also worth a visit at *http://www.dutch.nl/wilbwk/index.htm*

Results of 1997 ARI DX Contest

(category, QSOs, mult, score)

VK2APK	SO-CW	451	122	182783
VK8AV	SO-CW	127	75	45874
VK3APN	SO-CW	23	17	1994
VK4TT	SO-CW	23	13	1504

Electronic Submission of CQ-Contest Logs

by Doug KR2Q for the CQWW Contest Committee

1996 was the first year that we accepted electronically submitted (e-mail) logs, and we are very pleased with the results. We received 1224 individual log files on SSB and about 1100 on CW! However, 2000 logs (both modes), which were generated by computer, were submitted on paper only. PLEASE send a disk or e-mail entry if you use a computer. It is much easier for you to send us a disk or e-mail type submission than to send us paper. So PLEASE, if you use a computer to do your log, send us the FILES, not the paper. E-mailing is so easy and so inexpensive, there is no reason not to use it. Even if your log has less than 100 contacts, if you used contest software of any type, send us the file electronically! Our goal is to have every entrant, who used a computer to do their logging, send in a log file.

How To Submit Your Log

This year we are changing the preferred type of file which we would like to receive. We greatly prefer to receive a plain text, ASCII version of your log, rather than the binary or .BIN file. Acceptable ASCII formats include: CT software = yourcall.ALL; TR software = yourcall.DAT; Other fixed-column ASCII formats are acceptable. In case you're not sure just what this is, it is the file that looks exactly like a printed log; it has lots of columns including one for DATE, TIME, QSO NUMBER BY BAND, CALLSIGN, FREQ, EXCHANGE, NEW MULTS, POINTS, etc, and each QSO takes up one line.

We require TWO files for every electronic submission: a plain-text ASCII summary sheet; and your actual log of callsigns, bands, times, etc.

Be sure to NAME your files using your callsign. The summary sheet can be named: YOURCALL.SUM while the log itself can be named: YOURCALL.all or YOURCALL.dat, etc, depending on the type of file you send. Be sure to actually use your callsign and not the words, "yourcall." Eg: If your call is XZ1A, you would name your file XZ1A.all or XZ1A.dat. It is important to keep the correct SUFFIX (after the "dot"). CT uses .all and TR uses .dat. All types of ASCII files can be sent using regular e-mail.

For all types of submissions, be sure to put

the mode and the station callsign as the subject for each entry. When you send in your log, it will automatically be acknowledged by the server. If we have trouble reading your file, we may ask you to send a disk.

Submit your 1997 CQWW SSB log files to *ssb@cqww.com*. Submit your 1997 CQWW CW log files to *cw@cqww.com*. Submit any questions, at any time, to *questions@cqww.com*.

Remember:

1. We prefer ASCII files, NOT binary files.
2. Name the file using your callsign, eg KR2Q.all or KR2Q.dat.
3. Include a summary sheet file (yourcall.sum) with the log file.
4. Use YOUR callsign and mode (CW or SSB) for the subject (eg KR2Q SSB).
5. SSB and CW logs go to separate addresses (see above)! Do not send both CW and SSB together!
6. The E-domain (cqww.com) is for the CQWW DX contest only (Oct/Nov), not the WPX, not the CQ-160, and not any ARRL contests.

You may forward any questions to me (KR2Q) at *DougKR2Q@aol.com* or, you may directly contact the Contest Director (K3EST) at *K3EST@netcom.com*

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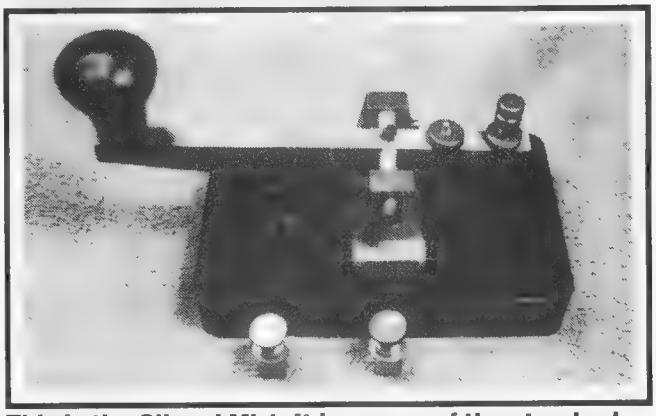
Pounding Brass

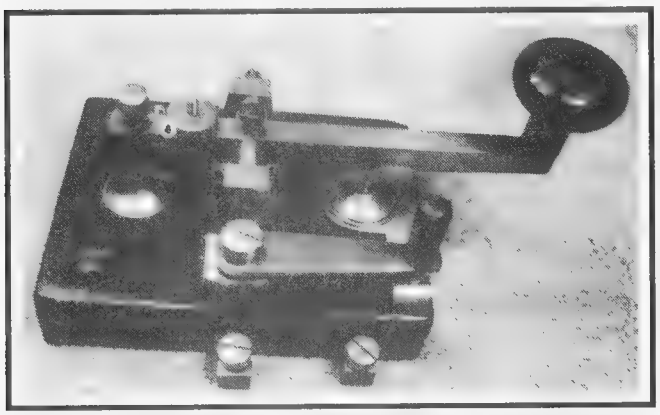
Stephen P Smith VK2SPS
PO Box 361 Mona Vale NSW 2103

To start off the new year I thought perhaps we might take a nostalgic look at some of the more common types of Australian-made hand keys of the type used by the PMG and amateur operators. However, I must point out these were by no means the only keys that were used as there were numerous makes and models to chose from.

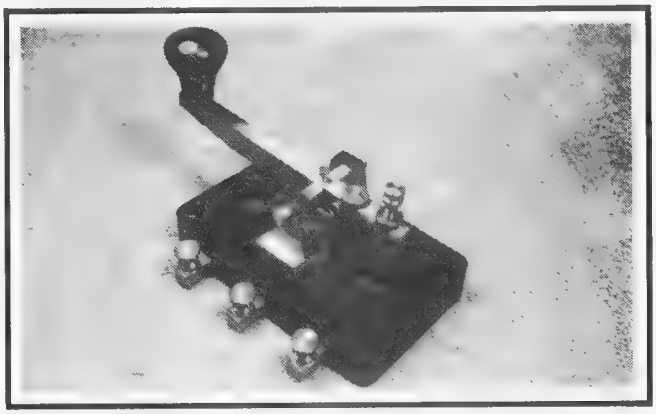
I would like to have submitted a lot more photographs but, as you are aware, we are limited to how much space we are allowed. I hope you and your families had a great Xmas and New Year.



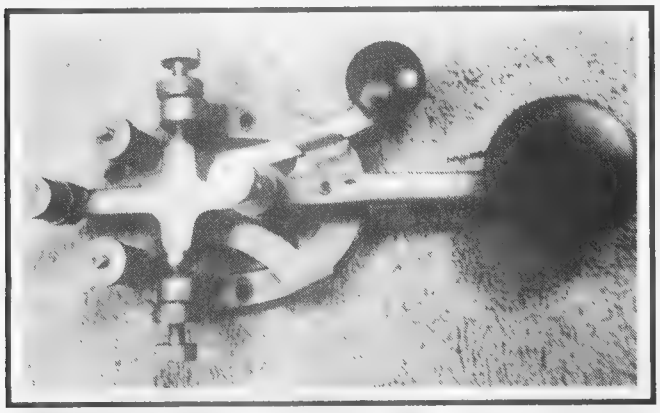
This is the Clipsal Mk1. It is a copy of the standard issue PMG Key.



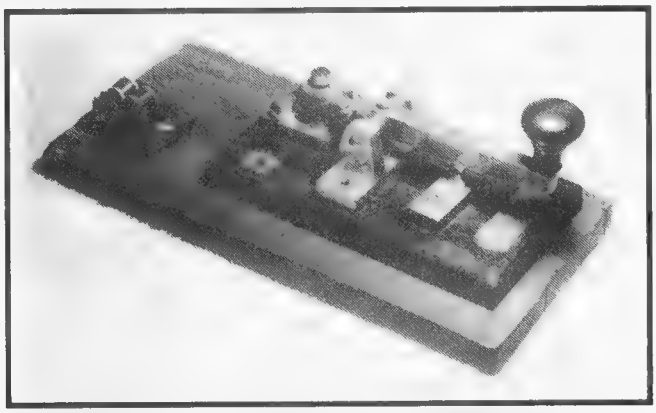
This was the standard issue PMG key with shorting bar.



This is the Clipsal Mk2. As can be seen, this key has three contact points rather than the standard two as normal.



This key was made by Buzza Products Sydney and is a copy of the American Landline Key as used last century.



This key was made by Amalgamated Wireless Australia Limited, No 97/5817, and fitted with a separate buzzer.

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How's DX?

Stephen Pall VK2PS
PO Box 93, Dural NSW 2158

This is the first month of 1998. The sun is shining, the temperature is up in the 30 degrees C range, and there are bush fires and violent storms around. The country is relaxed, the hot air from Canberra has temporarily vanished, and most of those who are part of the taxpaying workforce are on annual holidays.

The serious DXers of our amateur fraternity are still chasing new countries, prefixes, zones, band contacts or modes and islands. Sitting in their armchairs they reflect, between QSOs, about the achievements of the past.

Twelve months ago, Heard Island VK0IR was the big news with 80,673 QSOs, the largest number of contacts ever made by any DXpedition. This was followed by the activity from BS7H Scarborough Reef, S21XX Bangladesh, Yemen 7O1A (which was not accepted for DXCC), ZL9DX Auckland Island, VK0TS Macquarie Island, R1MVI Malyj Vysotskij Island, CY9AA St Paul's Island, VK9WM and VK9WY Willis Island, ZK1XXP North Cook, 5A28 Libya, K7K Kure Island, N4BQW/KH5 Palmyra Island, and 5A7A Libya.

And the immediate future? In February, 9M0C Spratly Islands will be the focus of attention, activated by a large group of multinational amateurs who will spend two full weekends on the islands. Tens of thousands of kilometres away, the World Radio Communications Conference 97 (WRC-97) has just finished. There are no reports yet of what was decided but the 40 metre amateur band revision was very much on the "discussion" table. There is a US proposal to "harmonise" the 40 m amateur band at 6900 to 7200 kHz for amateurs around the globe.

Here at home, propagation and the development of the new solar cycle 23 were the main topics. Twenty metre band DXers were horrified to hear, on 23 November, that the "A" index was 34 and the solar activity was at "major storm level" and the band was practically dead. However, on the same day, Chris VK2NYA and a number of other 10 metre DX enthusiasts had a whale of time. DX from all parts of the globe was pouring in. North and Central America, the Pacific, South East Asia, the Middle East, and Europe saturated the SSB segment of the band. The lesson: check all the bands, several times on each occasion, for propagation.

A happy and healthy New Year to you all!

DXing on 160 Metres

This column is only as good as the material supplied by its contributors. It was with considerable interest that I read Steve VK6VZ's letter which just arrived in time to be incorporated in this column. Here is what he wrote: *"There are a small but hardy band in VK that chase DX on 160 m. Perhaps the best known are Mike VK6HD, Bill VK6AS and Hugh VK5BC; but Peter VK3QI, Ron VK3IO, Paul VK3AJJ, Dave VK3EW, Bob VK3ZL, Geoff VK2OI, Alan VK8AV, Peter VK6APZ and myself (VK6VZ) are among the regulars.*

"Several of us are now close to achieving the coveted DXCC award for 160 m which, to my knowledge, has only been previously achieved by two Australian amateurs, VK6HD (#1) and Jim VK9NS (#2).

"I currently have 102 or 103 countries worked (all CW), but I am still waiting to receive the necessary cards to claim DXCC. Stations worked from VK in the last month or so include FH/DJ1RL, 5R8EY, ZS6UT, EA6SX, EA6ACC, KH8/N50LS, KH5/N4BQW, KH6/KL2A, ZL7AA, VE1ZZ, the USA from east to west, and many European and Russian stations.

"Working DX on 160 m is the biggest challenge there is for HF-orientated amateurs. I am fortunate enough to live on a half acre property in the semi-rural Perth hills, with space for an inverted U shaped dipole at 45 to 60' high (14-18 m), but there are stations, such as Peter VK3QI, who have worked 90 countries from a suburban block 8 km from the Melbourne CBD on both CW and SSB.

"For those who would like to try their hand at 160 m, a simple 1/4 wave inverted-L, fed against a tuned counterpoise, can get good DX results. If the horizontal section is a bit bent to fit the garden, it really doesn't matter.

"A simple but effective top loaded vertical using a loading coil wound on an up-turned plastic bucket for 160 m was described in Random Radiators earlier this year. Other simple, but effective, antennas include the double sized G5RV and W3EDP types, plus shunt-loaded HF/VHF towers fed as verticals.

"For those who fancy giving 160 m DXing a go, the CW DX will mostly be found between 1820 and 1840 kHz (the international CW DX window), with SSB DX above 1840 kHz. If conditions are good, the VK sunrise will bring signals from Europe, South East Asia and, for those in the eastern states, occasionally the Caribbean and South America.

"Here in VK6 it is usually easier to work into Europe and Africa than from VK2/3/4/5, but we miss out on the South American and Caribbean openings.

"For those who want to see what can be done on 160 m. and have access to the Internet, take a look at Nick VK2ICV's "Who's Who on 160" pages at http://www.watch4you.com/160/ For example, Bill W4ZV has 290 countries and 39 zones worked and is currently world leader in Nick's 'league table'."

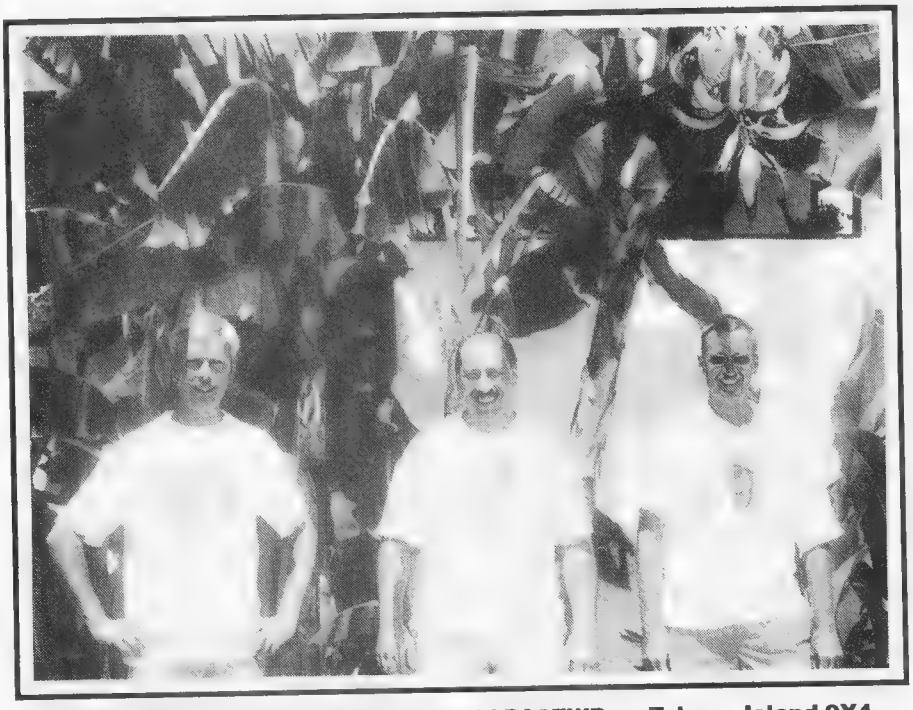
The Amateur Radio Club of Vietnam

On 27 October at 1126 UTC I was listening to a weak CQ call on 14222 kHz. After some difficulty, I had a contact with Bac Ai at the Vietnamese station of 3W6AR. His English was very limited, and his QSO procedure was elementary. Somehow, I got the direct QSL route from him. Later on I had my doubt about the authenticity of the station. Was it genuine? Was it a pirate? Possibly, who knows? As I have Vietnam confirmed, I really did not worry about it any further.

A few weeks later I was sent by VK6NE a colourful printed pamphlet which was distributed at the recent Beijing IARU Conference. This was the pamphlet of the Amateur Radio Club of Vietnam HCMC. Vietnam is not yet a member of the IARU Region 3, but sent some observers to the Beijing conference.

The pamphlet (in English) says that the Amateur Radio Club was founded in 1996 and was officially approved by the Government in 1997. It has three operating stations, 3W6AR at PO Box 732 TTSG, Ho Chi Minh City, Vietnam; 3W6LI at 202 Hoang Van Thu St, Phu Nhuam Dist, HCMC, Vietnam; and 3W6KA at PO Box 76, TTSG, Ho Chi Minh City, Vietnam. Chairman of the Amateur Radio Club of Vietnam is Mr Tran Thang Gong, Vice Chairman is Mr Pham Ba Trinh, and the Executive President is Mr Neuyen Bac Ai, the same gentleman who was my QSO partner on 27 October.

It appears that the Amateur Radio Club of Vietnam is sponsored by the Radio-Electronics Association of HCMC. The abbreviation of HCMC means Ho Chi Minh City.



Peter PA3BBP, Rob PA3ERC and Ronald PA3EWP on Tobago Island 9Y4, IOTA SA-009.

Rottnest Island – VK6ISL

Rottnest Island lies off the mouth of the Swan River, about 32 kilometres west of Perth in Western Australia. It is about 11 kilometres long and five kilometres wide. The island is one of the well known tourist destinations in Western Australia.

There are 250 holiday homes to rent, a youth hostel, museum, camping facilities, bike hires, bus island tours, a local railway to inspect, war relic gun emplacements, tunnels, wildflowers and wildlife.

Malcolm VK6LC who, during the past years, has been in the most inhospitable places in Western Australia and the Northern Territory giving the IOTA chasers a new island to "conquer", decided to have a short holiday from 6 to 12 September on Rottnest Island in civilised surroundings. However, he could not resist putting up his famous ATN 4 el 20 m vertical 4-square array system and have a number of QSOs from IOTA OC-164.

Tobago 9Y and St Lucia J6

Peter PA3BBP, Rob PA3ERC and Ronald PA3EWP have organised a second Caribbean tour, after having successfully visited Guadeloupe FG, Martinique FM, Dominica J7, and Turks and Caicos Island VP5 in 1996.

This year they were on St Lucia J6 from 22 to 30 August and made a total of 1,522 SSB, 5,312 CW and 27 RTTY QSOs. They were on Trinidad from 31 August until 11 September and logged 3,224 SSB contacts, 7,409 CW QSOs and 707 RTTY contacts. In total there were 18,445 QSOs in the log, 69% CW, 26% SSB, and 5% RTTY. 41% of the contacts were on the low bands (40, 80 and 160 m), 23% on the WARC bands and 36% on the other HF bands.

Finally, we have the VK statistics. In total there were 23 QSOs with 14 different VK stations; on 20 m, 2 CW, 1 SSB and 1 RTTY; on 30 m, 8 CW; and on 40 m, 10 CW and 1 SSB. Only VK2RM was logged on 20 m RTTY.

Future DX Activity

* Harold W0RI and Merv K9FD intend to visit the Beijing Amateur Radio Club BY1QH in December or January. Special attention will be given to 160, 80 and 40 metres.

* Stan SP3BCD will be the new operator of the Polish Antarctic station HF0POL which is located on King George Island (IOTA AN-10, WAZ 13, ITU 73). He will be there for a year starting 1 January 1998 and will operate mostly CW. Send your QSL card to SP3SUN either by the bureau or direct to Piotr Miranski ul, Rysza Smiglego 27/5 65-610 Zielona Gora, Poland.

* Dominique J28DB will be active from Djibouti for the next three years. QSL via F4AAQ.

* Volkmar DF2SS will be active from St Vincent J8 from 20 December to 20 January.

* Bill NH6D has moved from Honolulu to Guam. He will be using the callsign NH2/NH6D. QSL via his manager N6FF.

* Jean-Pierre F5FHI is active from time to time from Burundi as 9U5DX. QSL via F2VX.

* Kim OX3FV has been quite active on the WARC bands lately from Greenland. QSL via the bureau or direct via Kim Andersen, Box 3, DK-3930 Groennedal, Greenland.

* Amir 4X6TT has been heard from Antigua as V28TT. QSL via home call.

* Gus 9Q5TE is on the bands again from the Democratic Republic of Congo. He prefers CW on 40 m (0440 UTC), SSB on 20 m (2100 UTC) and 12 m (1700 UTC). QSL via SM0BFJ.

* Said A22EW was heard from Botswana on 20 m SSB (1900 UTC), 15 m (1800 UTC) and 10 m (1600 UTC). QSL via KB2MS, formerly KB2UCO.

* Abdullah EP2FM, who is the President of the Iran Amateur Radio Society (Anjoman-e Radiaomateuri-e Iran), is active again. He said that he is "the first legal amateur station since his station was closed down in 1983". He was heard on 14200 kHz around 1600-1700 UTC, especially on Fridays (see address of Iranian QSL Bureau in December *Amateur Radio*).

* Cedric F1PSR will be active from Sarajevo, Bosnia until March, possibly as T98PSR. QSL via F5WN.

* Jon 3DA0CA is active on the WARC bands and is now preparing to try the world of 160 metres. QSL via W4DR.

* Mike 5R8EE is putting 500 watts into a 3 element Yagi on 6 m. QSL via FR5EL.

* John C91JM (formerly TL8JM) is active from the USA Embassy on CW/SSB on all bands. QSL via W7MAE.

* Crozet Island will be on the bands again from December to February as FT5WG. Operator is F5BU.

* Pascal TL8PL has been heard on CW from Central Africa. QSL via F5LNA.

* Jack JA8SLU is active again from Mali, until January 1999, as TZ6JA, especially on 40 m. QSL via JA3EMJ.

Interesting QSOs and QSL Information

* N4BQW/KH5 – Chuck – 14245 – SSB – 0657 – Oct. QSL via WA4FFW, Mark McIntyre, 2903 Maple Ave, Burlington NC-27215, USA.

* A45XR/SJ – Paul – 14199 – SSB – 1243 – Oct. QSL via PO Box 981, Muscat, Oman.

* P3A – Cyprus – 14135 – SSB – 0622 – SSB – Oct. QSL via W3HNK, Joseph L Arcue Jr, PO Box 73, Edgemont, PA-19028, USA.

* 3W6AR – Bac Ai – 14222 – SSB – 1126 – Oct. QSL via Bac Ai, PO Box 732 TTSG, Ho Shi Minh City, Vietnam.

* 9X0A – Andy – 14195 SSB – 0446 – Oct. QSL via (new manager) DL5WM, Gottfried Gerth, Obere Dorfstr 13a, D-

Mal VK6LC on Rottnest Island as VK6ISL, in front of "Bathurst Lighthouse" with his 20 m 4-Square vertical array.

09661, Gruenlichtenberg, Germany.

* FM5GU – Dennis – 14164 – SSB – 0510 – Oct. QSL via WA4JTK, Alan Strauss, 17401 NW 47th Ave , Carol City, FL-33055, USA.

* T32RT – Ramate – 14164 – SSB – 0507 – Nov. QSL via Ramate Tekeaki, London Village, Christmas Island, Republic of Kiribati, Central Pacific.

* 9M6BG – Brett – 14021 – CW – 1051 Nov. QSL via VS6BG, Brett Graham, PO Box 12727, Hong Kong, China.

* XX9AU – Cheang – 21262 – SSB – 0508 – Nov. QSL via Cheang Vai Ip, PO Box 6018, Macau.

* 9M6CT – Phil – 14170 – SSB – 1050 – Nov. QSL via Phillip J Weaver, PO Box 7, Bangkok 10506 Thailand,

* 8J0OGN – Kako – 21070 – CW – 0606 – Nov. QSL via JARL QSL Bureau.

* Z31VP – Zoran – 14013 – CW – 0700 – Nov. QSL via DJ0LZ, Ace Jevremov, Badstr 8, D-8238O, Peisenberg, Germany.

* AP2TJ – Tariq – 21230 – SSB – 1103 – Nov. QSL via W3HNK, Joseph L Arcure Jr, PO Box 73, Edgemont, PA-19028, USA.

From Here There and Everywhere

* Len VK8DK, who used to live at Ali Curung, formerly Warrabi, north of Alice Springs and south of Tennant Creek, has moved further north to Katherine. He is now busy building his own house and a new business. This is the reason why he has not been heard on the bands lately. His address is PO Box 1434, Katherine, NT, 0851.

* Had an interesting chat with Phil, formerly VS6CT, now HS0/G4JMB. Phil retired from his Government post in Hong Kong some years ago and is now settled permanently in Bangkok. He did, and still does, a lot of travelling. He told me that he now has two locations for amateur activity. One in Bangkok as HS0/G4JMB and one in Kota Kinabalu in Sabah, East Malaysia, as 9M6CT. He will spend Christmas in the UK with family. January will see him in Bangkok and, from February to April, he will be in Sabah. He has the following QSL routes: cards for VS6CT should be sent to JA4ENL. Cards for 9M6CT, XX9CT, VR2CT and HS0/G4JMB should be sent to his Bangkok address, Phil J Weaver, PO Box 7, Bangkok, 10506, Thailand.

* Bill VK4UA is on the air again. He has re-built all his antenna system which was damaged some six months ago.

* Wally R1ANZ has been at the Russian Antarctic Base at Mirny (66 degrees South – 93 degrees East) since July 1996. He goes home mid-March 1998. His QSL Manager is UW1ZC.

* If you had a contact with CE0ZAM, send your card via PO Box 1, Juan Fernandez Island, Chile.

* The CF5 prefix was used by the Saskatchewan Amateur Radio Club to celebrate the 50th Anniversary of the Royal Canadian Army Cadet Corps.

* Do you want to operate a DXpedition from Guatemala (TG)? If so, you have to overcome the red tape of the new Guatemalan Telecommunication Act, which has affected the radio amateur service since January 1997. All Guatemalan and foreign operators licences have to be first certified by the Amateur Radio Club of Guatemala, as representative of the IARU. This certification has to approved by the Superintendent of Telecommunications and that authority registers the amateur in the official Telecommunication Registry. The applicant is then issued a certificate, the actual licence, which allows the operation of ham radio equipment on the amateur bands on HF, WARC and 2 metres.

* A61AJ has a new QSL manager, Bernie McClenny W3UR, 3025 Hobbs Road, Glenwood, Maryland 21738, USA.

* If you worked the special callsign 5J2X from Colombia, your card should go to HK3DDD.

* Some more confusion. The latest up-date on the QSL route for VK0ANARE (Tom VK0TS used the call for one week) and VI0ANARE is, contrary to what you may already have heard or read, via Alan VK4AAR.

* Mike, who was active as XU6WV, became a Silent Key in Cambodia. He was noted for his past activities as VR2WV, VS6WV and as SV0FE.

* Ray G3NOM/9M2OM returned to the UK on 2 November. He expects another overseas posting but, in the meantime, send all mail to: Ray Gerrard, C/o 37 Godward Road, New Mills, High Peak, SK12 2BU, UK.

* The Guam QSL Bureau is bulging at the seams due to uncollected QSL cards. Most of the cards there are for amateurs who are not residents of the island, visitors long departed without collecting their cards. According to a list produced by the Guam QSL bureau Manager, the holders of the following callsigns are Guam residents, therefore it is in order to send your cards to them via the Bureau system: AH2D, AH2G, AH2S, AH2X, KH2A, KH2G, KH2Q, NH2A, NH2E, WH2S, and WH2U. Most active KG6 calls are not Guam resident stations. KG6ASO is the only known KG6 station active from Guam this time. Always ask the QSL route from the Guam station and send your card to the QSL manager indicated.

* The Japanese group active in Mauritania as 5T5U has left the country. QSL via JA1UT.

* Martin HI3MTU has changed his callsign to HI3Y.

* The recent ZL7AA/ZM7A DXpedition made 12,000 QSOs from Chatham Islands. QSL via ZL2AL, the Bureau or direct.

* The Club station 9A1CRD in Croatia will use the special call 9A2OD to celebrate the 20th anniversary of the Club. QSL via 9A1CRD.

* Jim VK9NS, who was active as VU2JBS until 18 November, has returned to Norfolk Island. He was unable to get permission to operate from Bhutan, Bangladesh, Andaman Islands or the Laccadives.

* Change of QSL manager. Cards for past, present and future contacts with A61AU go

via W3UR effective immediately. QSLs should not go via K3LP.

* Mirek VK3DXI was active from Christmas Island as VK9XU from 22 to 26 December. He tried to balance a family holiday with ham activity. QSL via DL4DBR. Mirek is an electronic engineer and is based in Bangkok until the end of August 1988. He has his HS0/VK3DXI call already, but the licence issued with it put him into the Novice class (instead of Advanced). As a result, Thai Telecom have kept his HF gear until the class of licence is resolved. He is still waiting on the outcome of his recent application.

* The Bangkok Amateur radio Club HS0AC, where Mirek HS0/VK3DXI is a member, was active during the recent CQ WW CW Contest. They had special permission to operate on 160 and 80 metres (these bands are normally closed for amateur activity). If you worked them, send your card to LA7JO.

* The QSL Manager for all RW3AH DXpeditions, according to a letter received by Joe VK2CSZ is: Toivo P Laimitainen UA1C/RA3AR, PO Box 228, 188350 Gatchina, Russia.

* Richard 9N1RHM closed down his Kathmandu operation on 16 October.

QSLs Received

RA2FBC (4 m – DK1OJ); VP8CTR (3 m – DL5EBE); HC8N (3 w – AA5BT); TT8KM (1 m – F6FNU); XU2FB (4 m – N4JR); VP9KK (2 m – K1EFI).

Thank You

As always, I am grateful for the assistance given to me by many of you. Special thanks are due to VK2XH, VK2CSZ, VK2EJM, VK2EKY, VK2KFU, VK2TJF, VK3DXI, VK6LC, VK6NE, VK6VZ, PA3EWP and the publications *QRZ DX*, *The DX News Sheet* and the *DX News Magazine*.

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Spotlight on SWLing

Robin L Harwood VK7RH
5 Helen Street, Newstead TAS 7250
(03) 6344 2324
e-mail: robroy@tassie.net.au

Propagation

Propagation has been slowly improving on HF and, as this year commences, I do expect that it will pick up as the sunspot numbers rapidly increase. Initial indications are that the peak of this current cycle could be between March and September 2000.

A major "X" class flare erupted from the Sun early in November, causing a spectacularly brief total short-wave fadeout, but as it was on the far surface of the Sun, major disruptions did not eventuate. I am informed that, if the flare had been facing Earth, then considerable disruption would have been caused to HF and satellite communications plus electricity HT lines and undersea cables. These flares are indicative of increasing sunspot activity and, as this improves, so does propagation.

Over-the-Horizon Radar

Recently I have been hearing some Over-the-Horizon radar signals. Whilst listening to the BBC World Service at 0100 UTC on 11955, I could clearly hear pulses underneath. Australia is one of the few remaining nations using this technology but I am uncertain if this was the source. Somehow I doubt that this observation was, as it sounded quite different to the Jindalee system. This increased OTHR activity seemed to come up just when the crisis was at its peak over the issue of weapons inspectors between Iraq and the United Nations.

Other reports, particularly from the US, said that OTHR was consistently on 7038 kHz at around 1600 UTC. I queried these reports as, from supplied descriptions, it did not sound like OTHR, nor was it consistent with their known operation. However, these signals were also tied up with the Iraqi crisis.

Known anti-Iraqi and anti-Iranian clandestine stations do operate around this frequency and what was heard is "bubble jamming". Iraq and Iran use these jammers over clandestine broadcasts. The stations themselves are low powered but are completely overridden by the deliberate jamming. Incidentally, these clandestine broadcasts also use the main HF rescue frequency in Europe of 5680 kHz and these jammers cause interference there as well.

Listen from 1800 UTC and you may hear these jammers completely overriding the clandestine programming; a cat and mouse game develops as they hop all over the 5.6 MHz aeronautical allocation. These broadcasters are believed to be pro-Kurdish and close to the border of Turkey, Iran and Iraq in the neutral buffer zone.

Voice of Indonesia

The Voice of Indonesia has been rarely heard here in English, but recently I came across it on 11785 kHz from 0800 UTC. Signals are quite good, due mainly to the installation of 250 kW senders at various locations in Indonesia. However, I had some difficulty understanding because their pronunciation was extremely poor. Also, the presentation needed cleaning up as the female announcer kept hesitating, seemingly unsure as to what she was going to say next.

Australian Accent on Croatian Radio

Just after listening to Jakarta, I tuned around to see what else was about. On 11730 kHz there was a female reading the news and I naturally assumed it was Radio Australia because she had an Australian accent. The signal level was only fair and the items were mainly about Croatia. Imagine my surprise, when the short newscast concluded, to hear that it was indeed the Croatian Radio from Zagreb. Apparently this is a short-wave relay from their domestic service and they have several English language newscasts.

After the English finished, the newscast went into Croatian. I guess I should not have been too surprised over the Australian accented announcer because there are quite a number of Croatians here. Once again the frequency is 11730 kHz at 0900 UTC.

Short-wave on Domestic Networks

I have heard Radio Canada International on short-wave for some time and I was recently surprised to find it being relayed over the ABC Parliamentary and News Network. The program was on at 1230 UTC and it was a repeat of their 1200 UTC broadcast to Asia. When the program ended, the ABC announcer said that PNN also relays Deutsche Welle and Radio Netherlands in addition to the BBC World Service.

Many international stations have dropped short-wave in favour of being able to place their programming over domestic AM or FM networks. However, this has not been working out and the broadcasters are re-evaluating their strategy. Africa was one of their targets for this programme placement scheme, but several countries became nervous and promptly banned local stations from any relays from international stations such as the BBC and the VOA. Satellite delivery to listeners in Africa and SE Asia is also improbable because, economically, it is beyond the reach of the average listener. Also, several administrations have banned

private ownership of satellite dishes, especially in strictly Islamic countries. So it looks as if short-wave will be continuing, at least in the short term.

"Media Network" Changes

The popular "Media Network" may have changed its emphasis following a recent review by the listeners. Some segments may have been scrapped altogether which will not please some regular listeners. However, the Internet has changed the approach of the hobby, alienating older enthusiasts who find it difficult coming to terms with computer literacy.

"Cumbre DX" over WHRI/KWHR will cater for those who do not have ready Internet access for acquiring updated short-wave news. Times in this region are: 0230-0300 Saturday, 17510 kHz; 1200-1230 Saturday, 11565 kHz; and 0030-0100 Sunday (new), 17510 kHz.

Malta

Malta is broadcasting to Australia from 0200 to 0500 UTC, on Sundays only, via senders in the Russian Federation, in English and Maltese. They are heard on either 15550 or 17570 kHz. From 0500 to 0530 UTC, Malta has a Japanese language program. The station is known as the Voice of the Mediterranean. Signals are excellent from the 1000 kW sender on 17570 kHz.

Don't forget, if you have any news, please feel free to drop me a line or e-mail me at *robroy@tassie.net.au*. My thanks to *Media Network* and the *Electronic DX Press* for some information in this month's column.

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AMSAT

Bill Magnusson VK3JT
RMB 1627, Milawa VIC 3678
e-mail: vk3jt@amsat.org

National co-ordinator
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI
E-mail: vk5agr@amsat.org

AMSAT Australia net:
Control station VK5AGR
Bulletin normally commences at 1000 UTC, or 0900 UTC on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.
Frequencies (again depending on propagation conditions):
Primary 7.064 MHz (usually during summer).
Secondary 3.685 MHz (usually during winter).
Frequencies +/- QRM.

AMSAT Australia newsletter and software service
The newsletter is published monthly by Graham VK5AGR. Subscription is $30 for Australia, $35 for New Zealand and $40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:
AMSAT Australia
GPO Box 2141
Adelaide SA 5001

Keplerian Elements
Current keps are available from the Internet by accessing the AMSAT FTP site, *ftp.amsat.org* and following the sub-directories to "KEPS".

Amateur Radio Satellite Frequency/Mode Update

This summary is taken from the most up-to-date amateur radio satellite status reports that I have available at the time of writing. ANS and other Internet sources.

RS-12
Uplink, 145.91-145.95 MHz CW/SSB, Downlink 29.41-29.45 MHz. Operating normally, currently in mode A.

RS-15
Uplink 145.858-145.898 MHz CW/SSB, Downlink 29.354-29.394 MHz CW/SSB. Operating normally.

RS-16
Uplink = 145.915 – 145.948 MHz, Downlink = 29.415- 29.448 MHz. Beacons = 29.408, 29.451 MHz, 435.504 MHz and 435.548 MHz

Sputnik Anniversary Model (sometimes referred to as Sputnik-40 or RS-17)
Operating on non-rechargeable battery power. Signals loud and clear at the time of writing (30 November 1997). The beep...beep...beep is meant to emulate the signal from the original Sputnik. Beacon = 145.820 MHz. The satellite was planned to have an operational life of one to two months. The audio tone contains information about the internal temperature of the little Sputnik. A decoding program is available but you need to have made a .WAV file from the audio for the decoder to work.

SAFEX, MIR 70 cm Repeater
Uplink 435.750 MHz FM, Downlink 437.950 MHz FM, sub-audible tone 141.3 Hz. The SAFEX II repeater is working and stations are encouraged to use it. The crew members have the option of talking to amateurs using the repeater. More on MIR later in the column.

AMSAT (AO-10)
Uplink 435.030-435.18 MHz CW/LSB, Downlink 145.975-145.825 MHz CW/USB. Operating normally.

AMSAT (AO-27)
Uplink 145.85 MHz FM, Downlink 436.792 MHz FM. I have no reports of this satellite being turned on in this part of the world. Please let me know if you hear it.

FUJI (FO-20)
Uplink 145.9-146.0 MHz CW/LSB, Downlink 435.8-435.9 MHz CW/USB. Operating normally. FO-20 is in mode JA continuously.

FUJI (FO-29)
Voice/CW Mode JA:
Uplink 145.9-146.0 MHz CW/LSB, Downlink 435.8-435.9 MHz CW/USB.
Digital Mode JD:
Uplink 145.85, 145.87, 145.910 MHz FM, Downlink 435.910 MHz FM 9600 baud BPSK. Operating normally.

KITSAT-1 (KO-23)
Uplink 145.85, 145.9 MHz FM, Downlink 435.175 MHz FM, 9600 Baud FSK. This satellite is once again suffering from excessive deviation on the downlink. This comes about when the satellite orbits in full sunlight as it does from time to time.

KITSAT-2 (KO-25)
Uplink 145.980 MHz FM, Downlink 436.5 MHz FM, 9600 Baud FSK. The satellite is operating normally and carrying more traffic than usual due to the problems with KO-23.

UOSAT (UO-11)
Downlink 145.825 MHz. FM, 1200 Baud PSK. Beacon 2401.500 MHz. Operating normally.

PACSAT (AO-16)
Uplink 145.9, 145.92, 145.94, 145.86 MHz FM, 1200 bps Manchester FSK. Downlink 437.0513 MHz SSB, 1200 bps Raised-Cosine-BPSK 1200 Baud PSK. Beacon = 2401.1428 MHz. Operating normally.

DOVE (DO-17)
Downlink 145.825 MHz FM, 1200 Baud AFSK. Beacon 2401.220 MHz. DOVE transmits on 145.825 MHz and 2401.220 MHz. It is presently sending 1200 baud AX.25 (standard packet) ASCII telemetry about every minute on two metres. On S band it transmits PSK flags continuously and also the same data as is sent on two metres. The S

band beacons on DOVE and UO-11 afford an excellent opportunity to test your S mode equipment in preparation for Phase 3D.

WEBERSAT (WO-18)
Downlink 437.104 MHz SSB, 1200 Baud PSK AX.25. Operating normally.

LUSAT (LU-19)
Uplink 1200 bps Manchester FSK Uplinks: 145.84, 145.86, 145.88, 145.9 MHz FM, Downlink 437.125 MHz SSB, 1200 bps RC-BPSK. Operating normally.

UOSAT (UO-22)
Uplink: 145.900 or 145.975 MHz FM. Downlink 435.120 MHz FM, 9600 Baud FSK. Operating normally.

ITAMSAT (IO-26)
Uplink 145.875, 145.900, 145.925, 145.95 MHz FM, Downlink 435.822 MHz SSB, 1200 Baud PSK. This satellite was operating normally at last report.

Appeal for Help in Locating References

I received some correspondence recently from Chris Hill VK6KCH who is engaged in a research project into microsat antenna system requirements. He is particularly interested in producing a definitive study of the design requirements of "all-sky" (ie non-steerable) antennas. Chris is anxious to hear of any previous work done in this area. I have given him copies of a number of articles that have appeared in the AMSAT Journal over the years. If anyone else is aware of any work, no matter how old, in this area, Chris would be very happy to hear from you. His work could result in extending our knowledge of this area of amateur radio satellite work. Thank you.

New Version of SatSpy Program

I am currently "fine tuning" the latest version of this program. It contains a number of improvements and extra features and is well worth a look. Dave Capellucci has a new web site at *http://www.satspy.com* and a demo copy can be downloaded from there along with all sorts of kep element sets including, of course, visible satellites.

ASUSAT

This one should be worth waiting for. Jim White WD0E and others from AMSAT have been working quite closely with Shea Ferring, overall Program Manager, and a team of students at **Arizona State University,** on a new student-built satellite called **ASUSAT**. During his recent meetings with the student team, Jim reported that all major hardware components for the satellite are now built and working, and that the space frame is now complete. The focus of the project at present is on integration, software development and launch opportunities.

Once successfully launched, ASUSAT will operate on the amateur radio frequencies in Mode J. It will be capable of 9600 baud digital operation or it can be used as a "bent pipe" voice repeater. The satellite will carry two cameras, a GPS receiver and a group of experimental earth/sun sensors. It will also be fitted with numerous temperature sensors. The satellite uses an all-carbon composite structure shaped into a cylinder 25 cm high and 35 cm in diameter. Stabilisation will be via a student designed and built gravity gradient boom. Antennas will be monopoles for VHF and UHF. Output power on 70 cm will be between 2 W and 4 W depending on final design, orbit, and overall power budget. Currently, a Low Earth Orbit is planned.

Unfortunately, ASUSAT lost its launch slot recently when the rocket that was to have taken it to orbit had to be modified and ASUSAT's 10 pound mass allocation was used up by changes to the launcher. ASU officials are continuing to look for launch opportunities. Jim reports that funding from industry and ASU is intermittent but continues at a "keep-alive" level. Industry attention toward the project has increased recently as a result of awards won by team members at this year's Small Satellite Conference and other public relations efforts. Jim says that key industry contacts continue to be productive. Those who wish to learn more about the ASUSAT project can do so by visiting their Web site at: *http://www.eas.asu.edu/~nasasg/asusat/asusat.html*

[From AMSAT News Service]

Additional Features for "The Station" Program

Paul Willmont VP9MU, developer of The Station Program, reports that the program now supports in-band automatic Doppler correction for SAREX/MIR Simplex and the MIR SAFEX Repeater. The Station Program is a complete ground-station control program for Windows 3.1, 3.11 and Windows 95. It provides real-time tracking of satellites with automatic radio control.

It was originally designed especially for users of analogue modes (eg voice and Morse). The latest version can always be obtained from the AMSAT-DA web site, *http://www.amsat.bm*, and all proceeds from the registration are donated to the AMSAT Phase 3D Project.

[AMSAT News Service]

These additional features will make "The Station" program ideal for coping with the large Doppler excursions encountered on 70 cm when using (say) the SAFEX experiment on MIR. Most other programs will not handle in-band Doppler correction.

New Experimental Operations Begin on MIR

As part of ongoing frequency experiments to improve amateur radio operations on board MIR, and to better understand how these frequencies will be effective on the International Space Station, MIR will begin a two phase frequency experiment beginning 1 December 1997 and ending on 31 May 1997. For **phase 1**, a 70 cm/2 m cross-link experiment will operate for a three month period from 1 December 1997 up to 1 March 1998. On 1 December the MIR operating frequencies changed to: Uplink: 437.850 MHz, Downlink: 145.800 MHz.

Phase 2 of this experiment will use a two metre-only set of uplink and downlink frequencies. This phase of the experiment will begin on 1 March 1998 and will also be of three months duration. This experiment was developed by the international partners in Manned Space discussions at the recent Toronto AMSAT-NA Space Symposium. It has been endorsed by the representatives present at the conference which included SAFEX, SAREX, AMSAT-UK, the IARU Region 2 President, the IARU Satellite Adviser, (ZS5AKV), ARI (Italy) and RAC (Canada).

While not present at the Toronto meeting, the US Mirex team has also been consulted and have agreed with the spirit of this experiment. All hope that this experiment will help further understand how best to accommodate future operations of Amateur Radio on Manned Space Vehicles.

[AMSAT News Service]

Oops...Sorry, Puts MIR PMS Operation Off the Air

The MIR crew believes the antenna coax for the MIR PMS station may have been damaged during the space walk on Thursday, 6 November. It has been suggested to the crew not to use the PMS station until the cable is repaired. The crew may attempt to fix the coax cable during a scheduled December space walk. The PMS station should be operational again by the time you read this column.

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Eric Jamieson VK5LP
PO Box 169, Meningie SA 5264
Fax: 08 8575 1777
Packet: VK5LP@VK5WI.#ADL.#SA.AUS.OC
E-mail: vk5lp@ozemail.com.au

Five Metres

Its amazing how far *Amateur Radio* travels. A letter has been received from Bert Howes ZS6RO enclosing copies of information relating to five metre operations in South Africa during the 1930s. This was in response to my request for such news in the September issue. I will bring you some of Bert's information as soon as practicable.

Herb Stevens VK3JO has also responded with five metre information, and this will be used in due course.

The following came from Reg Galle VK5QR: *"Bob VK5RT reports that in 1933 he used to work Don VK5RD across town on five metres. Apparently very little activity back then.*

"The first VK6 contact on six metres was also made by Bob VK5RT, who worked VK6HM at 0105 UTC on 3-10-48. I well remember the occasion because I heard VK6HM call and was all set to reply, when my mains supply went off. Apparently the storm raging at the time caused the failure.

"A number of us, including VKs 5GB, 5LJ, 5CU, 5MK and 5QR, worked him later. This meant that a number of us thought we had worked all states as the Northern Territory is not a State. It was deemed necessary by the WIA that the Territory had to be included in WAS on six!

"At the end of 1949, Jack Coulter VK5JD, who worked for Civil Aviation, was sent to Alice Springs on relieving duties for a couple of weeks. The local six metre enthusiasts talked Jack into packing his six metre gear and a Bill Tilden four element beam suitably broken down into portable form, on to the 'plane for Alice Springs. He was set up and ready early in January 1950.

"On 10-1-50 VK5JD/p was worked by the Adelaide group, who allowed VK5RT to have the first QSO because he had made the first VK6 contact. The last VK5 to make the contact was Les VK5LC who was the only one to claim WAS.

"The rest of us decided we had already Worked-all-States and never did claim the certificate.

"They were the days Eric. We were very keen with all those records to be broken. On the lower frequencies like 80 and 40 during the early thirties I will always remember the days I worked WAC off two 45 volt dry batteries and a couple of watts to a crystal oscillator plus amplifier. But that's a different story."

Yes Reg, they were certainly good days. I wonder if today the same gentlemanly approach would be given to the first contact to a new area as your group did in 1950. With regret, I would to have to say that I doubt it.

First F2 QSO for Cycle 23

The first confirmed six metre F2 contact for Cycle 23 occurred on 14/10/97 at 0101 when Peter PY5CC/PY0FM worked Kenji JR6HI in Okinawa. Signals were 5x9. Peter said it was a surprise contact because there were no other JA or Pacific stations to be heard.

TEP News

If you ever needed to be told that six metres is rapidly improving, then the following is a detailed description of events during most of November. The last few days are missing due to my cut-off date for January news being a week earlier to allow for Christmas.

You have been given a good run-down of what has occurred during September, October and November. I cannot promise such detailed information in the future; it takes many hours to collect, sort, check and enter the line by line activities. Hopefully, it will alert operators that six metres is really moving along now. It seems highly likely that we will see increasing numbers of F2 contacts, commencing with 1998.

Thanks to the JA Cluster, VK3OT, GJ4ICD, W3EP, V73AT, VK2BA and my own on-air observations.

31/10: 2332 PY5CC 50.110 WP4O
1/11: 0006 PY2DP 50.110 FG5BG
1/11: 1455 ZS6AXT to 9H5EE, IT9RZR
1/11: 1502 ZS6PJS to IT9RZR, IK0VAQ
1/11: 1708 V51VHF/b 50.018 G6YIN
1/11: 1925 9H1CG 50.110 7Q7RM
1/11: 1933 V51VHF/b 50.018 9H1CG
1/11: 2041 ZD8VHF/b 50.033 4Z5JA
1/11: 2317 PY5CC 50.110 FG5BG
1/11: 2322 PY5CC 50.110 WP4MSL
2/11: 0000-0300 ZP6CW hearing YV4,J32,TI4, TI5,HP3
2/11: 0032 PY2XB 50.105 TI4JHQ
2/11: 1542 GJ4ICD 50.110 ZS6XJ
2/11: 2152 PY2XB 50.130 9G1YR
2/11: 2227 ZD8VHF/b 50.033 EH7KW
2/11: 2249 PY2XB 50.110 FM5BG
2/11: 2343 PY2NQ 50.120 PS8DX
2/11: 2351 PY2XB 50.118 KP3AA
2/11: 2354 PY2XB 50.110 FG5BG
3/11: 0014 PY5CC 50.110 KP4UK
3/11: 2054 ZD8VHF/b 50.033 EH7KW
3/11: 2356 PY2PA 50.110 TI4JHQ
4/11: 0133 HC2FG 50110 LU7EMK
4/11: 2239 KH6HI/b 50.065 V73AT
5/11: 0534 VK6ACY 50.150 JA6SBW
5/11: 0630 UA0/BY-TV 49.750 +/- VK3SIX
5/11: 0808 VK6HK 50.110 JA6SBW
5/11: 0815 VK6ACY 50.110 JA6SBW
5/11: 0822 VK6KZ 50.110 JA6SBW
7/11: 0315 VK3OT hrd VK8VF/b 50.057 559
7/11: 0330 VK3OT hrd VK8RAS/b 50.047 599
7/11: 0331 VK3OT hrd UA/BY CB 39.300, also 49.750 +/-
7/11: 0347 VK3OT JA7ZMA/b, VK8VF/b, VK8RAS/b
7/11: 0400-0530 VK8RAS/b VK3SIX
7/11: 0400 VK3OT 50.120 VK8GF 5x9
7/11: 0500 VK3OT Malay TV 48.2602 by scatter
7/11: 0505 VK3SIX 50.112 JR2HCB
7/11: 0512 VK4BRG 50.110 V73AT 5x9
7/11: 0523 VK3SIX 50.112 JR2HCB
7/11: 0524 VK3SIX open to Asia 42 to 50 MHz
7/11: 0530 VK3OT 50.120 VK3AMK 55A b/s
7/11: 0550 VK3OT carrier link 43.850 5x9
7/11: 0604 VK4BRG 50.110 V73AT
7/11: 0604 VK3OT 50.112 JR2HCB 559
7/11: 0620 Wagga TV 46.240 59A
7/11: 0625 VK3OT hrd VK7RAE/b 50.056, VK7RST/b 52.370 57A
7/11: 0630 VK3OT and VK5LP: 49.750 +/- offsets 5x9
7/11: 0640 VK3OT – CB radios from 28 to 44 MHz
7/11: 0650 Chinese cordless phones 48.250 5x9
7/11: 0700 VK3OT and VK5LP: Carriers on 45.240, 42.570, 42.260, video on 49.7481, 49.7497, 49.7500, 49.7505, 49.7506, 49.7507 etc.
7/11: 0705 VK3OT hrd VK8RAS/b 559 – video goes down, VK8RAS/b goes up and vice versa
7/11: 0800 sun sets – all signals gone

Comment from Emil W3EP: 7/11: *"The cycle seems to be picking up fast now, with the flux above 100 for a few days. Ten meters has been open nearly every day (not always to Europe though—mostly N-S paths), with the MUF above 40 MHz most days, as you have noted as well. Certainly by this time next year we will have our hands full keeping track of all the 6-meter DX!"*

8/11: 0535 V73AT hrd VK4RGG/b 50.058
10/11: 0515 ZL3TY hrd VK video 46.240 S9, sound 51.740 S4
10/11: 0700 VK1RX video and sound 45 to 55 MHz
10/11: 0703 ZL3TY hrd VK2RSY/b 599
10/11: 0704 ZL3TY to VK3DUQ, very weak
10/11: 0745 VK1RX hrd ZL3SIX/b, worked ZL3TY 0750 5x9
10/11: 0800 VK3OT 50.140 ZL3TY 5x5
10/11: 0805-0842 ZL3TY hrd VK7RAE/b 579, worked VK3DUT, VK3OT, VK7GUN, VK2BHO, VK3DEM
10/11: 0840 VK3DUQ 50.140 ZL3NW 5x9
10/11: 0900 VK3OT ZL3SIX/b, video 45 to 55 MHz
11/11: 0730 VK3SIX hrd ZL3SIX/b to 599
11/11: 0732 VK3SIX 50.130 ZL2KT 5x9
11/11: 0735 VK3SIX hrd VK4ABP/b 559
11/11: 0735 VK3SIX 51.028 ZL2MHB/b 559
11/11: 0800 VK3SIX video 45 to 55 MHz
12/11: 0245 JA1RJU 50.760 ZL-sound 5x9, video 45.240/250/260
12/11: 0530 VK3SIX 50.057 VK4RGG/b, VK2 and VK4 TV

12/11: 1130 VK3SIX 52.345 VK4APB/b, VK4DO
12/11: 1133 VK3SIX 50.047 VK8RAS/b, VK5AYD
13/11: 0515 V73AT 50.010 JA2IGY/b
15/11: 0000 ZL4TBN to VK4BRG
15/11: 0030-0118 ZL3TY to VK4DO, VK4AFL, VK2ERF
15/11: 0200 ZL3TIC 46.170 video 5x9
15/11: 0500 VK8SEA 55.250 Asian TV offsets
15/11: 0515 VK8SEA 49.750 video UA0
15/11: 0600-0734 VK8SEA JA1,2,3,4,5,7,9 – 16 stations
15/11: 0616 VK8RH 50.110 JA1RJU
15/11: 0627 VK3SIX/8 50.140 JA3EGE
15/11: 0630 JA3EGE, JA5CMO hrd VK3SIX/b
15/11: 0630 VK3SIX/8 50.120 JA3EGE, JA5CMO
15/11: 0815-0847 ZL3TIC video 46.170, 46.240, 57.250, 5x9
15/11: 0905 ZL3TIC 50.130 VK7GUN
15/11: 0910 ZL3TIC VK7RAE/b 5x9
15/11: 0915 ZL3TIC video 48.250 strong
16/11: 0554-0637 JA1RJU to VK2IBT, VK2ZDX, VK4JSR, VK4AFL, VK4APG
16/11: 2100 ZL3TIC reports VKs all day, VK1,2,3,4,8
16/11: 2115 ZL3TIC to VK2DN 5x9
16/11: 2215 ZL3TIC to VK4DO, VK4JH, 5x9
16/11: 2200 VK1RX 55.250 ZL TV
16/11: 2300 ZL3TIC 69.740, 86.250, 5x9
16/11: 2315 VK2BA hrd VK7RAE/b 5x9, VK4BRG/b 5x7
16/11: 2342 VK2EMA 50.160 VK4JH
17/11: 0220-0300 V73AT video 46.240, 46.260, 46.120, 45.260
17/ll: 0429-0630 JA1RJU to VK2HO, VK4LR, VK2BA, VK4CWJ, ZL3NW, VK4WTN, VK4BIT, VK4AFL, VK2VC, VK2FLI, VK2BTS, VK2ZDX, VK2IBT, VK4JSR, VK4BRG, VK4RGG/b, 5x7-9
17/11: 0436 JA3EGE 50.120 VK2HO 5x9, VK4CWJ, VK4LR, VK4RGG/b
17/11: 0501-0518 ZL3NW 50.110 JA1RJU, JR2HCB, JH1WHS
17/11: 0510 ZL3TIC 50.110 JA1RJU, JH1WHS
18/11: 0000 YJ8UU 50.120 VK2YO, VK4BRG, VK4KK, VK4CV, VK4DMI, VK4WTN
18/11: 0332 JF1NUV 50.0535 VK3SIX/b 579
18/11: 0336 JA1RJU 50.110 VK5BC 579
18/11: 0350 JH0HME 50.056 VK7RAE/b 599
18/11: 0357 JA1RJU 50.130 VK3XQ 599
18/11: 0405 ZL2AGI hrd JA3 weak CW 50.110, first for cycle
18/11: 0410 JA1RJU 50.140 VK3AMK 5x9
18/11: 0425 JL4GTO 50.110 VK5RO 419/529
18/11: 0435 JA1RJU 50.110 VK5RO 579
18/11: 0441 JJ3AZA/1 50.116 VK5BC
18/11: 0445 JA1RJU 50.056 VK7RAE/b 599
18/11: 0530 JA1RJU 50.0535 VK3SIX/b 559
18/11: 0530-0543 VK3SIX/3 50.120 to JR2HCB, JE2DWZ, JA1WLO, JG2AJK, JJ3AZA/1, JH7LLE, JF1NUV, JH0RNN
18/11: 0545 JR0YEE/b 50.032 559
18/11: 0546 JA7ZMA/b 50.027 559/579
18/11: 0546 JH0ZND/b 50.490 579
18/11: 0555 JA1LYK Keyer? 50.022 579
18/11: 0600 JA2IGY/b 50.010 559
18/11: 0603 VK3SIX/3 50.105 JF1NUV 559
18/11: 0608 VK3SIX/3 50.130 JA1RJU 5x9
18/11: 0621 UA/BY TV 49.750 +/- 5x9
19/11: 0437-0511 JA to VK2, VK4
20/11: 0700 VK3OT ZL TV 45.250
21/11: 0115 VK4BRG/b 50.077 Es.
21/11: 0200-0300 VK4JH 50.104 VK2BHO SSB
21/11: 0230-0300 VK5BC 50.110 VK4s
21/11: 0230 VK4ABP/b 52.345 Es
21/11: 0240 VK7RAE/b 50.0565 b/s
21/11: 0300 VK8RAS/b 50.047 Es
21/11: 0348-0525 JA1RJU to VK5PO, VK5NC, VK5RO, VK5ZBK, VK3BXA, VK3CNX, VK3ANP, VK3OT, VK3AKK, VK7JG, VK7GUN, VK2ERF, VK2BHO
21/11: 0400 49.750 +/- UA0 TV from 360 degrees TEP
21/11: 0400-0530 JA1,2,3,4,7,9 worked VK2,3,4,5,7
21/11: 0405 50.010 JA2IGY/b TEP 559
21/11: 0407 50.016 JA6YBR/b TEP 539
21/11: 0410-0530 JL4GTO, JA1RJU to VK3XQ, VK3AKK, VK3SIX, VK3AMK, VK3CNX, VK3ANP, VK3BXA, VK3OT, VK2BHO, VK2ERF, VK2APG, VK7GUN, VK7JG, VK5RO, VK5NC, VK5ZBK, VK5PO,
21/11: 0415 50.023 JA1ZYK/b TEP 559 Chiba QM05br
21/11: 0415 50.027 JA7ZMA/b TEP 579 QM07
21/11: 0415 50.032 JR0YEE/b TEP 559 PM97
21/11: 0415 50.047 VK8RAS/b E scatter 339 PG66
21/11: 0416 50.490 JG1ZGW/b 539 TEP
21/11: 0415 50.485 JH9YHP/b 539 TEP PM64 Toyama
21/ll: 0423-0459 JA9BHZ to VK3AYZ, VK7GUN, VK5ZBK, VK7JG, VK2ERF, VK3SIX, VK5RO, VK3ANP, VK3XQ,
21/11: 0425 VK3OT to JE3TJS/m 5x5, band full of JAs
21/11: 0430 50.195 slow scan TV signal 599+
21/11: 0415 on – JA1RJU, JE3TJS, JA1AUD, JE0NWC (Harry JH0HQP), JA9BHZ, JH7LLE (500w), JE1RXJ, JE2TPM, JA4TOH (rare Yamaguchi), JI3CWB, JN1MKU worked VK2, VK3, VK5 and VK7GUN
21/11: 0500-0830 VK3OT hrd VK4BRG/b 50.078, VK4ABP/b 52.345
21/11: 0530 V73AT reported 46.260 TV Tamworth on 28.885
22/11: 0001 ZL2WNB 50.129 JA3EGE
22/11: 0350 ZL3TIC 50.110 JA3JTG 5/9
22/11: 0350 ZL3TIC reports American Samoa TV on 55.250/59.750
22/11: 0351-0410 ZL3TIC 50.140 JG3IFX, JN3NFQ, JA3QJA, JA3AQR, JH3APA, JA3GR, JG3GNU, JA3JTG
22/11: 0356 ZL3NW 50.130 JH3OWO
22/11: 0400-0412 ZL3TY 50.150 to JA2,3, 11 contacts
22/11: 0403&0420 ZL3TIC 50.130 3D2CM 5/9+
22/11: 0455 ZL3TY to JA2,5, 5 contacts
22/11: 1900 ZL3TIC hrd VK TV on 46.240 and 46.170 5x9+
22/11: 2010 ZL3TIC – strong signals from VK1,2,3,7
22/11: 2045 V73AT hrd video 45.250, 45.260, 46.172 strong
22/11: 2048-2232 ZL4TBN to YJ8UU, VK3OT, VK3CAT, VK3DUQ, VK4AFL, VK4KK, VK4JSR, VK4BKM, VK4YPM, VK2YDC, VK2AFH, VK2AJ
22/11: 2100 VK3OT hrd ZL3SIX/b 50.040, all 45 MHz TV offsets 599
22/11: 2110 YJ8UU 50.110 ZL3TIC 5x9, also ZL3AUU, QSL ZL2HE
22/11: 2110 ZL3TIC reported strong signals from VK1,2,3,4,5,7
22/11: 2115 ZL4TBN 50.145 YJ8UU
22/11: 2130 ZL2MHB/b 51.028 and Nicam sound 599
22/11: 2130 ZL3TIC – 57.240, 57.250, 57.260 5x9, Am. Samoa 5x9, 69.750, 86.250, 91.750, 100.300, 100.500, 105.200 broadcast FM from VK all 5x9
22/11: 2140 VK3OT to ZL3NW, ZL3TY, ZL3TIC
22/11: 2140 YJ8UU 50.110 VK3OT 5x3, Stewart, Port Vila, also to VK4JSR, VK2BA, VK3DUT, VK7GUN
22/11: 2200 VK3s to FK8FB 5x5 Noumea
22/11: 2230 VK3OT hrd VK4BRG/b 599, 55.250 TV 599, MUF above 80 MHz
22/11: 2300 YJ8UU 50.140 VK3SIX 5x9, also VK3,4,5,7
22/11: 2336 V73AT video 49.750/46.250/46.260/46.172
22/11: 2345 V73AT 50.110 KH6HKL 5x5, KH6HME 559, KH6HI 579
22/11: 2348 JA3EGE 50.147 ZL3TPY 50.147
22/11: 2354 V73AT 50.110 V73A 5x9 Marshall Island 9
22/11: 2359 ZL2TPY 50.147 JR0QFA

There was a report that G4XPL had heard VK6RPH/b twice during November around 1730! I have tried, but am unable to obtain additional information. Last cycle the latest propagation from Perth to UK was at 1400.

23/11: 0000 JR0QFA 50.147 to ZL2TPY
23/11: 0000 PY5CC 50.110 7J6CCU
23/11: 0000 YJ8UU to VK1,2,3,4,5,7
23/11: 0001 JA3EGE 50.129 ZL2WNB
23/11: 0002 JA1RJU 50.147 ZL2TPY 5x9
23/11: 0002 V73AT 50.110 KH6VP 5x5
23/11: 0007 JA1RJU 50.147 ZL3NW 5x9
23/11: 0009 VK3OT 50.155 JA1VOK 5x9
23/11: 0010 ZL2KT 50.125 JA1RJU 5x7
23/11: 0010 VK3OT 50.155 JG1TGN 5x9
23/11: 0010 VK3OT 50.155 JA0GLM 5x9
23/11: 0010 ZL3TIC to JA1,2,3, 55.2550, 59.750, 5x9 AU b/s

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23/11: 0011 VK3OT 50.155 JR1LZK 5x7
23/11: 0011 VK3OT 50.105 JH0HZO 559
23/11: 0030 VK3OT hrd VK4BRG/b until 0400
23/11: 0056 VK3OT hrd VK8RAS/b 559
23/11: 0115-0119 V73AT 50.110 JA1 – 7 contacts
23/11: 0136-0209 V73AT to VK4APG, VK4JSR, VK4YPM, VK3ALM, VK3ATQ, VK3YY, VK3HI, VK3OT, VK3AMK, VK3ZNF, VK3JWZ, VK3SIX, VK2TP, VK2APG, VK2ZDX, VK2QF, VK1VP, VK5NC
23/11: 0212 V73AT 50.110 CW until 0400
23/11: 0234 VK3OT 50.110 V73A 5x9
23/11: 0251 VK3OT hrd VK4APB/b 52.345 559
23/11: 0330 R1 TV PN Vladivostok, hrd by VK3OT, VK2QF, VK1RX, VK5LP
23/11: 0415 VK5NC to V73AT
23/11: 0420 VK5AYD CQ call from Coober Pedy, SA
23/11: 0430 ZL3TIC hrd 46.170, 45.240, 45.250, 55.240, 55.250, 55.260
23/11: 0758 VK3OT 50.110 V73AT
23/11: 0900 VK3OT 50.047 VK8RAS/b, VK4ABP/b, VK4BRG/b
23/11: 1900 ZL3TIC 46.240, 46.170 VK video strong
23/11: 2110 YJ8UU 50.110 ZL3TIC 5x9, ZL3AUU
23/11: 2145 VK3OT 50.110 JY8UU 5x9
23/11: 2152 V73AT 45.260, 46.172, video
23/11: 2343 ZL2TPY 50.110 JA3EGE

On 23/11 three different types of propagation were noted, TEP, Sporadic E and Aurora.

Scott VK4JSR wrote: *"A big thank you to the few operators that used 50.150 and 50.200 as calling frequencies during the huge E opening on 23 November.*

"The removal of some of the pressure from the DX window, assisted those of us who do wish to work DX, and gave a little bit of space.

"However, the number of stations still using the DX window for local (VK to VK) contacts is a concern. Their operating truly affected the success of a number of DX contacts being made, particularly their insistence on answering a VK calling DX on 50.110!

"Slowly we hope to see 6 m band users educated in the 'correct' use of the band – all it is, is just showing a little consideration, we have a whole 300 kHz to use, with 50.200 – 50.300 left almost empty!

"So, for those who were too involved in talking to other VKs, you missed – V73AT, YJ8UU and FK8FB."

24/11: 0355 Vladivostok video
24/11: 0355 JA5FFJ 50.110 539
24/11: 0400-0530 VK3OT worked JA1, 2, 3, 4, 5, 6, 7, 8, 9, 0 – 100 contacts in 90 minutes mainly on CW, 50.130/50.107/50.115. VKs 3AMK/3AKK/3DQJ/3XQ also participated
24/11: 0353 ZL2AGI 50.140 JA1RJU 5x9
24/11: 0359 ZL2AGI 50.110 JA1RJU
24/11: 0407 ZL1AKW 51.390 JA1RJU 5x7
24/11: 0456 VK3OT 50.120 ZL3TIC, ZL3TY by AU
24/11: 1230 VK3OT 45.250 ZL4-TV, intense AU b/s never heard on ZL video before
24/11: 1300 VK3OT 50.750 ZL4-TV sound, by AU b/s
24/11: 1302 VK3OT 46.240 VK2-TVO video, by AU b/s
24/11: 2123 V73AT 45.250 video

25/11: Special note from **Steve VK3OT** reports: *"Following an intensive afternoon opening 0455-0552 to all JA call areas, at 0617 Western Chinese TV 49.751, 49.7498 etc., 0737 Channel A2 55.2496 with extremely high burr in sound (60 Hz). 0820 55.2394 cf A2 60 Hz raster and 55.2550 spur (equals 15,575 lines) which indicates 55.250 NTSC video. Triangulation by VK5NC QF02 and VK5LP PF94 puts the signal as coming over the South Pole! From where? South America?"*

David VK2BA reports that: *"Things are livening up on Six for the new season. Whenever the band opens I go straight to 50.200 to use the new calling frequency and to encourage others to do the same. A few are starting to use it but there are others who will never shift from 50.110 as far as I can determine. Well, that will be to their disadvantage because they are starting to miss out on a lot of contacts because they are getting ignored by many.*

"I had a good JA opening on 17/11 around 0500. Worked 18 JAs in five zones and had them well piled up. Quite exciting. Haven't heard anything like it for many years. There were a few weak JAs in this afternoon (21/11) around 0515 but those that came up on or near 50.110 got well and truly obliterated by a station who called and called over them on CW. I hope that JAs were all that were missed and not something more exotic."

As the Es season progresses, I have observed that an increasing number of stations are shifting off 50.110 and are spreading out up to 50.150 and higher. The new 50.200 calling frequency is being increasingly used for Es contacts, which indicates responsible operating, and leaving 50.110 for the real F2 DX. JAs can also be found on various frequencies although a few seem to like to live on 50.110.

Tim V73AT, now has a TE Systems S/S amplifier which runs 400 watts CW mode. He will be absent from V73 from 13/12/97 to 5/1/98.

VK3OT will be absent from 27/12/97 to 1/3/98.

Vale Mike XU6WV

OPDX is sad to report that Mike W0YZS, who many have worked as XU6WV, became a Silent Key (SK) on 27/10/97 in Kampuchea, Cambodia. Mike was also noted for his activities as VR2WV, VS6WV, SV0FE, SV0FE/SV5 and SV0FE/SV9. OPDX sends deepest sympathy to the family.

The above reported by Steve VK3OT. Geoff GJ4ICD added that he had worked Mike several times in SV and VS6.

UK/Europe

Ted Collins G4UPS reports that Ron 7Q7RM in Malawi had his first 1997 contacts with G on 2/10. The 7Q7SIX beacon is still operating on 50.003 from KH75. John 7Q7JL also operates on six metres but is extremely busy with work at the moment.

From Ethiopia ET3SIX is now on six metres, also Tony A45ZN has verbal permission to operate from Oman. From January 1988 Dale VQ9QM will be on six metres.

Countries worked/heard for October: 4N1, 7Q7, 9A, 9H, CN8, CT, EH, EH6, EH9, F, G, HB0, IS0, LZ, OH, OK, OZ, PA, SM, SP, TR, V51, YU, total 23.

News from VK6

Wally VK6KZ advises: *"Neil Sandford VK6BHT and Wally Howse VK6KZ have had two home to home contacts on 10 GHz SSB and are prepared to claim the 378 km as some sort of 10 GHz record! Not many can operate from home to home over that distance so it may last for some time! On 3/11/97 at 1410 signals were 5x6 both ways with some QSB, but were very good over a half hour period and were operating on the trailing edge of a trough down the west coast."*

VK6KZ also worked Rick VK6XLR at Exmouth via the Exmouth repeater on 146.850 MHz. The VK6RBS beacons from 200 km south of his QTH in Perth were at good strength including the one on 1296 MHz. On the same evening Bill VK6AS in Esperance was frustrated with no responses on 144.100 MHz, notwithstanding copying the Adelaide, Mt Gambier and Geelong 2 metre beacons! [*Phone calls can help! ... VK5LP*]

"David Lloyd VK6AOM in Buntine (north of Wubin) and about 230 km at 18 degrees from Perth is being worked regularly on 144 and 432 MHz from Perth and (on CW) by Bill VK6AS in Esperance. Cec Andrews VK6AO has also worked David on 1296 MHz SSB and he has been heard on that band by Alan Woods VK6ZWZ and by Wally Howse

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VK6KZ but no two-way contacts yet. David has steadily improved his antenna system since VK6KZ worked him on 15/10/1997 when David only had a 144/432 MHz vertical!

"New operators on 144 MHz SSB include Don Truscott VK6UT, Tony Green VK6YAG and Don Grimble VK6KAR all in Perth.

"Trevor Niven VK5NC is helping with the 10 GHz Perth beacon antenna by slotting some wave-guide to similar specifications as the VK5VF beacon supplied by David Minchin VK5KK. Neil VK6BHT has completed the transmitter, Don VK6HK the keyer and Wally VK6KZ the power supply. Tests with the beacon into a 20 dB horn have been very successful with Neil hearing the beacon on the 3/11, the first day of the tests.

"Al Edgar VK6ZAY has won the WIA Home Construction Trophy at the Northern Corridor Radio Club Hamfest held on 2/11 with a brilliantly designed and constructed Spectrum Analyser covering to about 7 GHz. It utilises a number of recycled sub-systems of other gear such as the FM828. He beat a number of other contestants including Terry Grammer VK6TRG with self designed transceivers for 3.5 and 5.7 GHz, exploiting the ERA MMICs and a 160 metre handheld."

An EME signal

Rick Kowalewski VK6XLR at Exmouth said in an e-mail that a CW signal was heard on 144.0324 MHz between 1230-1234 on 15/11/97 during the ARRL EME contest. Moon at the time was at 66 degrees az and 12 degrees el from grid OG78bb.

"My Yagi was pointed towards the moon at the time. I cannot read CW, but I did recognise the station calling CQ. There are no stations within 1000 km of me that use 144 MHz CW, as far as I know. My station consists of an Icom IC-820 and a 11 el Yagi fed via LDF-50A heliax, but no pre-amp."

Mike Farrell VK2FLR replied that: *"Rick would have been hearing K5GW. I worked him on 144.032 on Sunday night and he was moving my S meter up to S3 in a 2 kHz passband. Definitely the strongest signal out of North America these days.*

"It just goes to show what you can hear off the moon using one Yagi! Others worked were: JL1ZCG, SM5BSZ, SM5FRH, W5UN, KB8RQ, SM0FUO, RU1AA and SM5DCX. Operating time was about four hours all up."

So there we are, answers can sometimes be found in these columns!

Closure

Through September, October and November, six metres has been reasonably busy, especially around 49.750, plus many beacons, although operators have not been plentiful. December should see amateur activity increase.

Keep in mind the Ross Hull Contest (which commences after Christmas Day), the VHF/UHF Field Day in January, and the John Moyle Memorial Contest in February.

Closing with two thoughts for the month:

1. Drive carefully. Remember it is not only a car that can be recalled by its Maker, and
2. Inflation is a method of cutting a dollar note in half without damaging the paper!

73 from The Voice by the Lake

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Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

Editor's Comment in November 1997 Amateur Radio - Two Pin Plugs

There is an ASA (Australian Standard) for such plugs and sockets. It states that where the Extra Low Voltage is reference to Earth, it is recommended that the radial pin be the **earth** pin. This follows closely the Standard for three pin plugs wherein it also states that the radial pin shall be the earth pin. *(A copy of the relevant page of the Standard was included to support the statement. Ed)*

Actually, I think that the Standard grew from positive earth systems such as those common on some boats. I have seen an airport installation using such plugs on a positive earth system also, but with a 50 V supply.

Nevertheless, the Standard does exist and I know of many amateurs who abide by the Standard. It would appear that most of Australia abides by the ASA rules and that (again) Victoria wants to go its own way (said with tongue in cheek!).

Bill Sebbens VK4XZ
PO Box 511
Maleny QLD 4552.

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HF Predictions

Evan Jarman VK3ANI

T Index: 46

These graphs show the predicted diurnal variation in key frequencies for the nominated circuits. They also nominate the best amateur band for communication.

The frequencies, identified in the legend, are:-

- Upper Decile (F-layer)
- F-layer Maximum Useable Frequency
- E-layer Maximum Useable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency

The predictions were made with the Ionospheric Prediction Service program, ASAPS V3.2. The T index used is shown above the legend. The Australian terminal azimuth, path and propagation mode are also given for each circuit.

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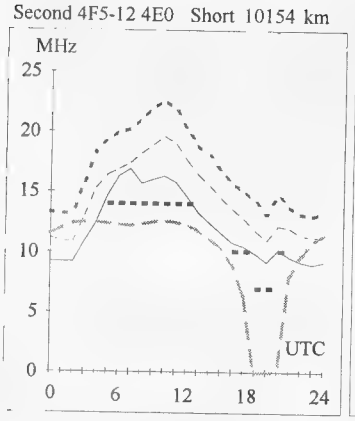
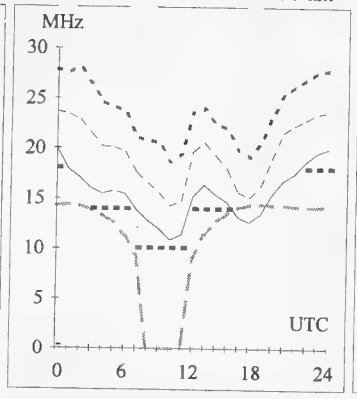
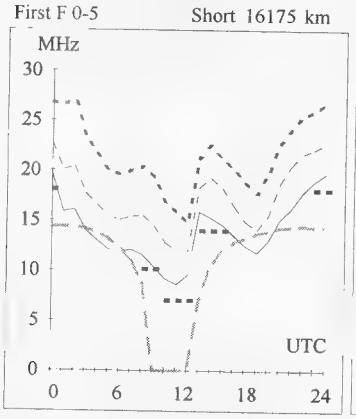
Adelaide-Capetown 226
Second 4F5-12 4E0 Short 10154 km



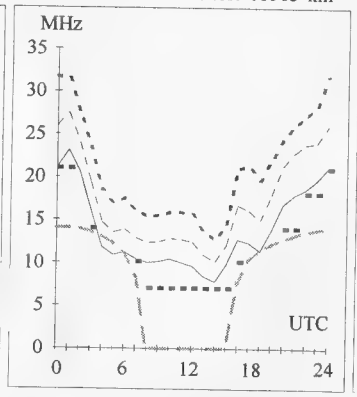
Brisbane-LIma 122
First F 0-5 Short 13056 km



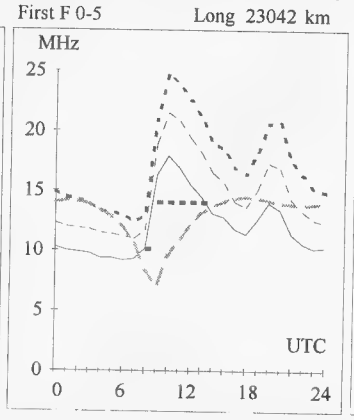
Adelaide-Miami 95
First F 0-5 Short 16175 km



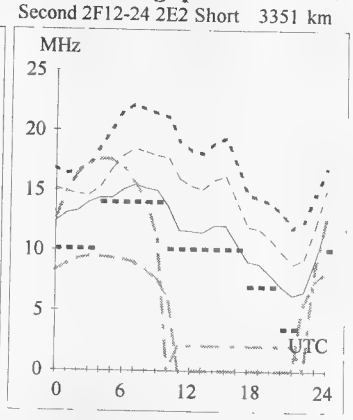
Brisbane-Los Angeles 59
Second 4F3-6 4E0 Short 11563 km



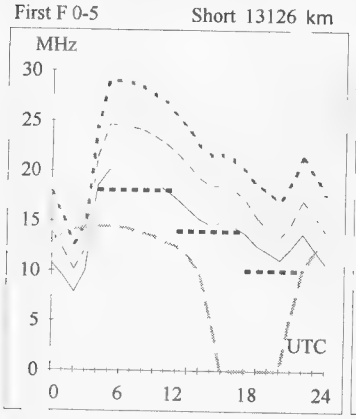
Canberra-London 136
First F 0-5 Long 23042 km



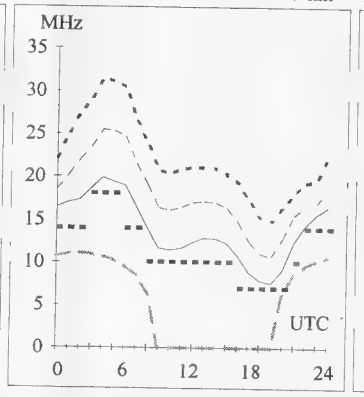
Darwin-Singapore 295
Second 2F12-24 2E2 Short 3351 km



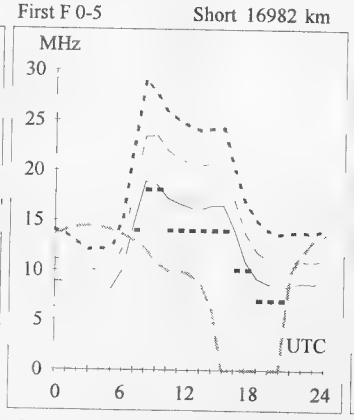
Adelaide-Tel Aviv 291
First F 0-5 Short 13126 km



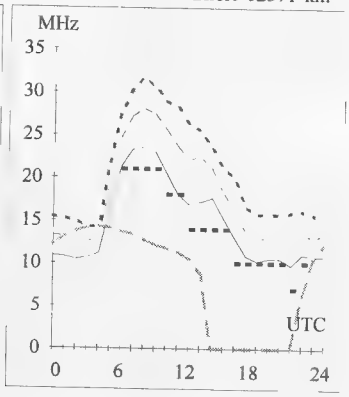
Brisbane-Port Moresby 342
First 1F8-14 1E0 Short 2090 km



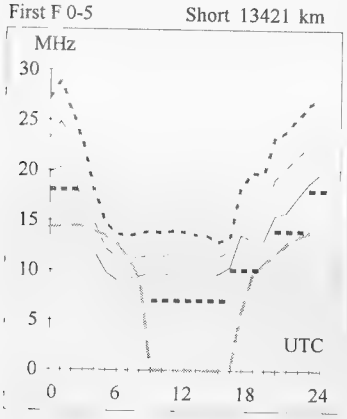
Canberra-London 316
First F 0-5 Short 16982 km



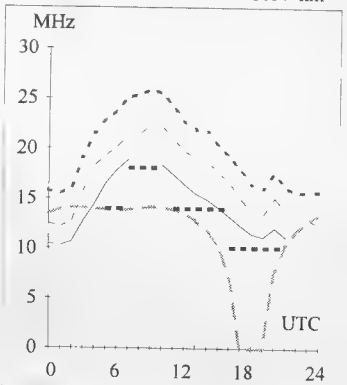
Darwin-Sofia 311
First F 0-5 Short 12371 km



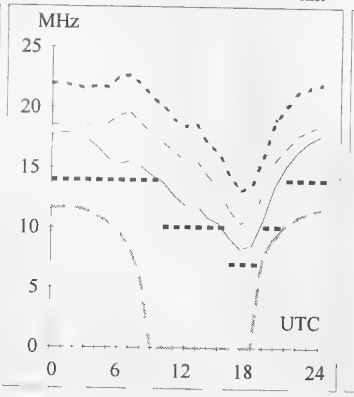
Adelaide-Vancouver 49
First F 0-5 Short 13421 km



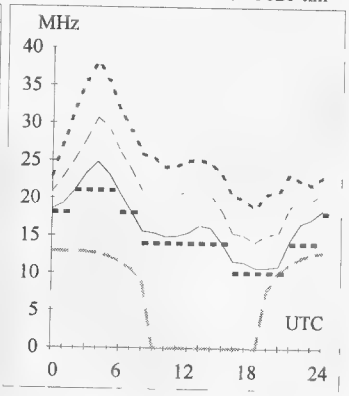
Brisbane-Pretoria 230
Second 4F3-8 4E0 Short 11657 km



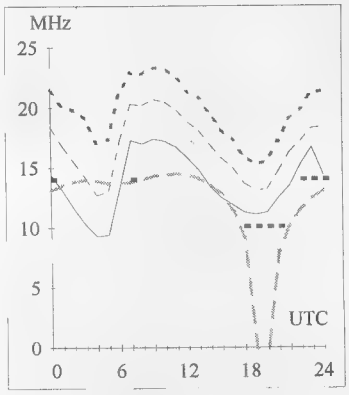
Canberra-Auckland 102
First 1F7-12 1E0 Short 2300 km



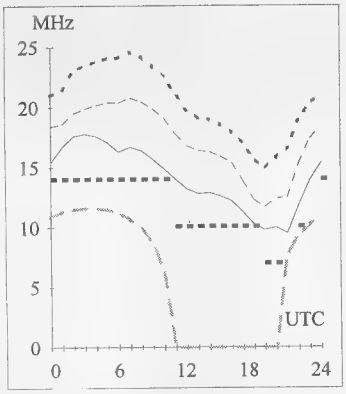
Darwin-Suva 103
First 2F5-10 2E0 Short 5126 km



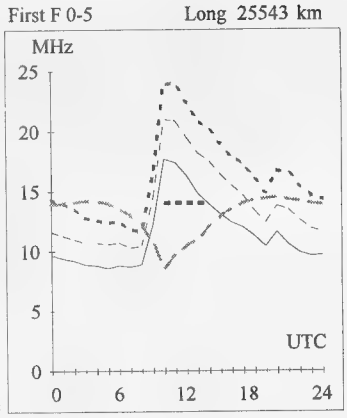
Hobart-Accra 227
First F 0-5 Short 14783 km



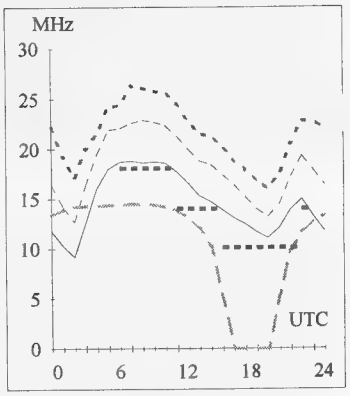
Melbourne-Bali 310
First 2F7-13 2E0 Short 4434 km



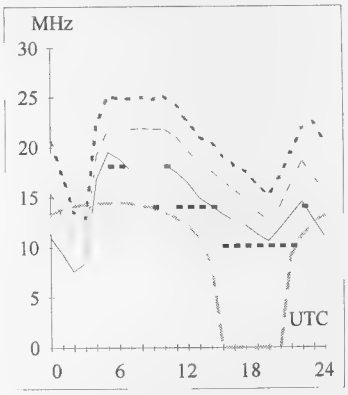
Perth-London 133
First F 0-5 Long 25543 km



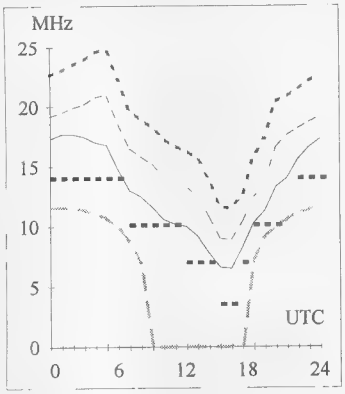
Sydney-Nairobi 255
First F 0-5 Short 12147 km



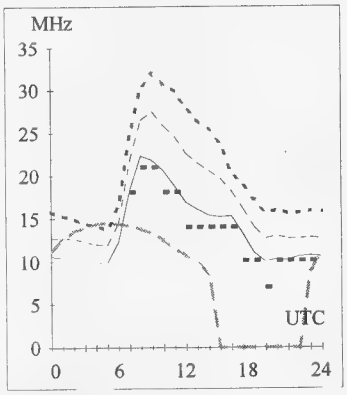
Hobart-Cairo 278
First F 0-5 Short 14264 km



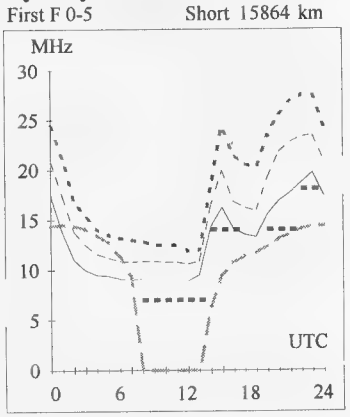
Melbourne-Honolulu 53
Second 4F7-13 4E0 Short 8879 km



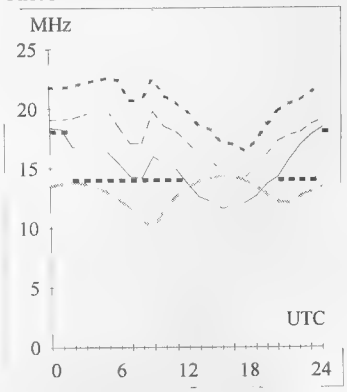
Perth-London 313
First F 0-5 Short 14481 km



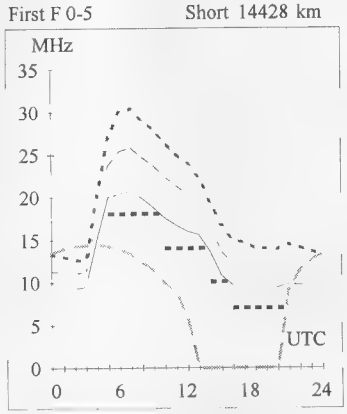
Sydney-Ottawa 58
First F 0-5 Short 15864 km



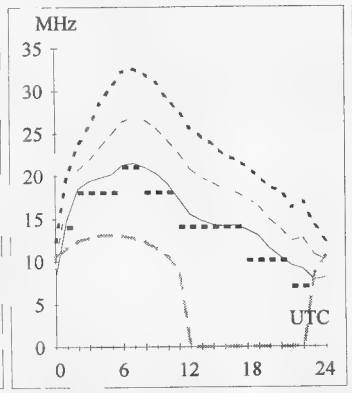
Hobart-Rio de Janiero 169
First F 0-5 Short 12619 km



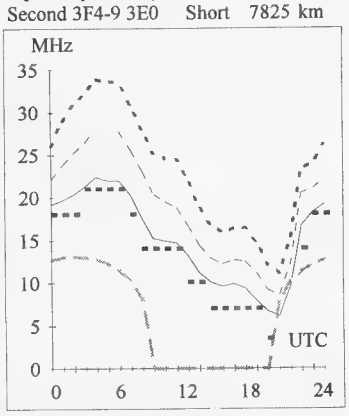
Melbourne-Moscow 316
First F 0-5 Short 14428 km



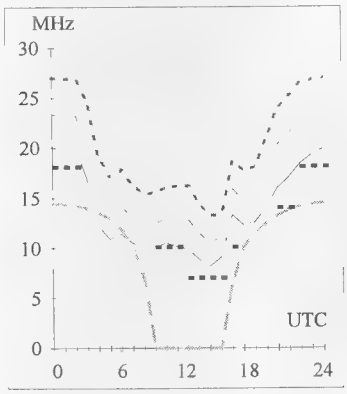
Perth-New Delhi 325
Second 3F4-10 3E0 Short 7872 km



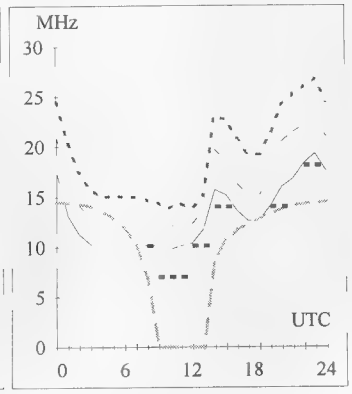
Sydney-Tokyo 350
Second 3F4-9 3E0 Short 7825 km



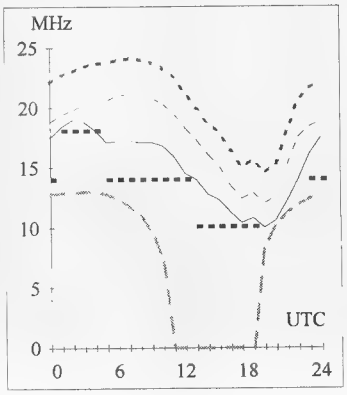
Hobart-San Francisco 61
First F 0-5 Short 12764 km



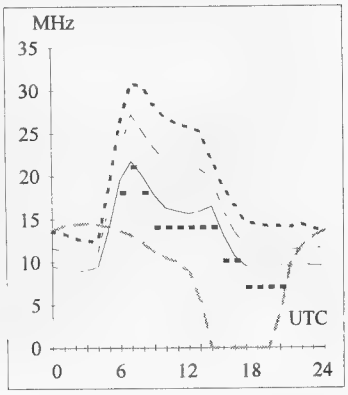
Melbourne-Washington 75
First F 0-5 Short 16382 km



Perth-Wellington 119
First 2F4-10 2E0 Short 5256 km



Sydney-Warsaw 313
First F 0-5 Short 15589 km



HAMADS

- Hamads may be submitted on the form on the reverse side of the *Amateur Radio* address flysheet. Please use your latest flysheet where possible.
- Please submit separate forms for **For Sale** and **Wanted** items, and be sure to include your name, address and telephone number (including STD code) if you do not use the form on the back of the *Amateur Radio* address flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment offered for sale should be included in the Hamad.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at $25.00 for four lines (twenty words), plus $2.25 per line (or part thereof), with a minimum charge of $25.00. Cheques are to be made out to: WIA Hamads.
- Copy should be typed or in block letters, and be received by the deadlines shown on page 1 of each issue of *Amateur Radio*, at:

  Postal: 3 Tamar Court, Mentone VIC 3194
  Fax: (03) 9584 8928
  E-mail: vk3br@c031.aone.net.au

TRADE ADS

• **AMIDON FERROMAGNETIC CORES**: For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at: Webb Electronics, Albury: Assoc TV Service, Hobart: Truscotts Electronic World, Melbourne and Mildura: Alpha Tango Products, Perth: Haven Electronics, Nowra: and WIA Equipment Supplies, Adelaide.

• **WEATHER FAX programs** for IBM XT/ATs *** "RADFAXZ" $35.00, is a high resolution short-wave weather fax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder. *** "SATFAX" $45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver. *** "MAXISAT' $75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add $3.00 postage. ONLY from M Delahuntly, 42 Villiers St, New Farm QLD 4005. Ph 07 358 2785.

• **HAM LOG v.3.1** - Acclaimed internationally as the best IBM logging program. Review samples....AR: "Recommend it to anyone": The Canadian Amateur: "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology". ARA: "Brilliant". Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just $59 (+ $5 P & P), with a 90 page manual. Special 5 hour Internet offer. Demos, brochures available. Robin Gandevia VK2VN, 02 369 2008 BH, fax 02 369 3069. Internet address rhg@ozemail.com.au.

FOR SALE NSW

• HF antenna and tower: **60 ft (18 m) three stage wind-up tower**, 3 sets of guys, turnbuckles, **TH6DXX** antenna, **Daiwa rotator**, dismantled Sydney, $900. E G Popham VK2EZQ, QTHR, 019 460 437, 1900 - 2100 AEST.

• **Kenwood TS-940S** HF txcvr, VGC, s/n 7060094, $2490 ONO, must sell ASAP (need the money!). Tony VK2DJW, QTHR, 02 9489 3312.

• **Kenwood TS-440S** HF txcvr, with ATU, mobile bracket, recently serviced by Kenwood, some marks on casing, handbooks, no box, $1500 ONO. Peter VK2FFA, 02 4324 4160.

• **Motorola Maxar** VHF and UHF. **Mizuho QRP 40 m CW txcvr**. **Tektronix 1230 logic analyser**, $3000. **Sony ICF-2001** receiver, $50. 8 channel **scanning airband receiver**, $50. **Paccom pactor**, $150. Adrian VK2ALF, 02 6452 5555.

FOR SALE VIC

• **Kenwood TR2600A** hand-held, s/n 5022246, EC, manual, $200 ONO. Keith VK3AFI, QTHR, 03 5221 3658.

• **Yaesu FT-101ZD** HF txcvr, s/n 090484, with matching **FV-101DM** VFO, s/n 1I010076, plus **YD-148** mic, EC, full manuals, $450. **TH6DXX** tri-band 6 el beam with manual, GC, $400 ONO. Keith VK3AFI, QTHR, 03 5221 3658.

• **Kenwood TS-700SP** 2 m txcvr, incl external VFO and set of xtals, $400. **Icom IC-730** HF txcvr, $400. Damien VK3RX, 03 5427 3121.

• **Mazda E2200 diesel camper van**, fitted out as radio unit for WICEN events, registered, RWC, dual battery, wired 12 V/240 V, Armstrong rotator, $4,400. Philips FM-320, Kenwood TS-180S, set of Hustler antennas can be included extra. Reg VK3IT, QTHR, 03 5039 6245.

• **Subaru portable generator** with instruction manual, as new, 90 hours only, ideal for outback or home and caravan use, runs my Kenwood TS-50 txcvr OK, rated output 240 V/450-550 W, battery charging 12 V @ 8.3 A, very quiet, 18.5 kg, $650. Homebrew storm cover free. Any trial at my QTH. H V Lonsdale VK3DND, 03 5153 0717.

• **Icom IC-275A** 2 m multi-mode txcvr, AC/DC, $1200. **Icom IC-475A** 70 cm multi-mode txcvr, AC/DC, $1650. **Icom IC-25A** 2 m 25 W FM mobile, $150. **Bird 4381** RF Power Analyst, $700. Adam VK3ALM, 015 362 799, 03 9794 7873.

• **Nally tower pole extender pipe**, 165 x 4.88 mm, galvanised, 3 m long, can discuss delivery in Melbourne, Geelong or Western Victoria, $200 ONO. David VK3XLD, QTHR, 03 5282 4440 after 6 pm.

• 36 inch 3 blade **ceiling fan**, Australian, all metal, with 5 speed controller, as new, $30. Allan VK3AMD, QTHR, 03 9570 4610.

FOR SALE QLD

• **Atlas 210X** mobile txcvr, s/n 7232, plus Digi readout, $300. **Ten-Tec Delta 580**, s/n 5800C528, $400. **Kenwood TR-2200A** (VHF), s/n 452858, **TR-3200** (UHF), s/n 620940, pigeon pair, $200. **Daiwa RF-550** RF speech processor. A P Kay VK4DJ, 1261 Bruce H'way, Black River QLD 4818, 077 786 031, 015 167 096.

• **4CX250B tube socket, chimney**, $15 set. **Crystal ovens**, 12 and 6.3 V, $25 each. **Split stator tuning capacitors**, various. John VK4AAF, QTHR, 07 4928 6573.

• **Yaesu FC-700** ATU, s/n 150043, full details in DSE catalogue page 87, no manual, $140. Gordon VK4CXB, 07 5594 5115.

• **Estate: Kenwood TS-830S** trcvr, $650. **Kenwood TS-930S**, $1100. **AT230** ATU, $150. **SP230** speaker, $70. **Yaesu FL-2100Z** linear, $650. Butternut 80-10 m vertical, Chirnside 20 m ° wave vertical, Emtron 10/15/20 m vertical, Ringo 2 m vertical, Morse keys, books, manuals, catalogue 45 cent stamp. Peter Hadgraft, 17 Paxton Street, Holland Park QLD 4121, 07 3397 3751 (AH).

• **Icom IC-740** transceiver, excellent receiver, good reports on transmissions on all bands, very good working order, appearance, 2 VFOs, RIT/XIT, memories on all bands, $800. Call for copy of spec sheet. John VK4SZ, QTHR, 07 4061 3286, e-mail to *john@comnorth.com.au*

FOR SALE SA

• **40 ft tilt-over tower**, $150 ONO. J L Fairlie VK5FLJ, QTHR, 08 8671 0236.

WANTED NSW

• **RCS or Q-Plus Reinartz coil** in metal can, must be in good working order or unused. S R Dogger VK2KSD, QTHR, 02 6677 9292.

WANTED VIC

• **Atlas 310X or 215X** in good working order. Gerhard VK3EWM, QTHR, 03 9439 8353 (AH).

WANTED QLD

• **Circuit details of Philips Type 1628** s/n 55 VHF telephone (AM) Tx, DCA ident Y5181, 124.1 MHz, all expenses refunded. **Copy of audio tape made at the 1997 AGM** at Redcliffe for the presentation of an award to Percy VK4CPA. Merv VK4DV, QTHR.

WANTED TAS

• **HP355D attenuator knobs**, two only. Trevor VK7TB, 03 6398 2118, fax 03 6398 1629.

MISCELLANEOUS

• **The WIA QSL Collection** (now Federal) requires **QSLs**. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose VIC 3765, tel 03 9728 5350.

ar

WIRELESS INSTITUTE OF AUSTRALIA

Your Hobby Your Voice

Representing Radio Amateurs Since 1910

Silent Keys

Due to space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of:

NL (Norman Lionel)	PENN	L30418
RC (Rex)	BLACK	VK2YA
D G	TURNER	VK3ADI
M J A (Maxwell)	WHITING	VK5KTZ

Rex Black VK2YA

1912 - 1997

Born in 1912 and first licensed about 1932, Rex was active on-air right up until his passing on 19 November.

During WW II he was a Flight-Lieutenant in the RAAF, mainly training radio operators, but he saw active service on two training trips to Canada when he acted as ship's radio officer.

After the war, Rex ran radio clubs in schools where he taught, and encouraged many young people to become radio amateurs through the WIA Youth Radio Scheme, which he founded.

He also made many tapes to assist new amateurs to use CW, of which he was particularly fond. A foundation member of the Morsecodians Society, he was looking forward to their reunion in Wagga Wagga, due to be held late November. Vehemently opposed to CB, Rex was very concerned about the loss of amateur bands to CB Radio, seeing this as the thin edge of the wedge.

A member of the Wagga Amateur Radio Club, he will be greatly missed by his many friends both inside and outside the amateur radio fraternity, by his wife Kath, and son Bill and daughter Robin and their families.

Wagga ARC
Blue Mountains ARC
ar

QSP News

Free Ceramic Resonators Still Available

In his article *Receive SSB on Your Shortwave AM Radio* which appeared in *Amateur Radio,* October 1997 on page 8, Peter Parker VK1PK advised that readers unable to obtain the 3.58 MHz ceramic resonator required could obtain one from him on receipt of a stamped, self-addressed envelope.

Peter has advised *Amateur Radio* that he still has a number of resonators left. The remaining resonators will be made available on a first come, first served basis, and none will be supplied after April.

So, if you need a ceramic resonator, be quick! Full details of the offer appear on page 10 of October's *Amateur Radio*

VK QSL BUREAUX

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600 CANBERRA ACT 2601
VK2	PO Box 73 TERALBA NSW 2284
VK3	40G Victory Blvd ASHBURTON VIC 3147
VK4	GPO Box 638 BRISBANE QLD 4001
VK5	PO Box 10092 Gouger St ADELAIDE SA 5000
VK6	GPO Box F319 PERTH WA 6001
VK7	GPO Box 371D HOBART TAS 7001
VK8	C/o H G Andersson VK8HA Box 619 HUMPTY DOO NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court KINGSLEY WA 6026

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

	Division Address	Officers			Weekly News Broadcasts		1998 Fees
VK1	ACT Division GPO Box 600 Canberra ACT 2601	President Secretary Treasurer	Hugh Blemings John Woolner Les Davey	VK1YYZ VK1ET VK1LD	3.570 MHz LSB, 146.950 MHz FM each Sunday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet aus.radio.amateur.misc newsgroup, and on the VK1 Home Page http://www.vk1.wia.ampr.org	(F) (G) (S) (X)	$72.00 $58.00 $44.00
VK2	NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124) Phone 02 9689 2417 Freecall 1800 817 644 Fax 02 9633 1525	President Secretary Treasurer (Office hours Web:http://marconi.mpce.mq.edu.au/wia e-mail address: vk2wi@ozemail.com.au Packet BBS: VK2WI on 144.850 MHz	Geoff McGrorey-Clark Eric Fossey Eric Van De Weyer Mon-Fri 11.00-14.00)	VK2EO VK2EFY VK2KUR	From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.	(F) (G) (S) (X)	$69.00 $56.00 $41.00
VK3	Victorian Division 40G Victory Boulevard Ashburton VIC 3147 Phone 03 9885 9261 Fax 03 9885 9298	President Secretary Treasurer (Office hours Tue & Thur 0830-1530) Web: http://www.tbsa.com.au/~wiavic/	Jim Linton Barry Wilton Rob Hailey	VK3PC VK3XV VK3NC	VK3BWI broadcasts on the 1st Sunday of the month, starts 10.30 am. Primary frequencies 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3WI on Victorian packet BBS and WIA VIC Web Site.	(F) (G) (S) (X)	$75.00 $61.00 $47.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 5496 4714	President Secretary Treasurer e-mail address: wiaq@brisbane.dialix.com.au Web: http://www.wiaq.powerup.com.au	Rodger Bingham Peter Harding John Presotto	VK4HD VK4JPH VK4WX	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 28.400 MHz SSB, 29.220 MHz FM, 52.525 MHz FM, 146.700 MHz FM, 147.000 MHz FM, 438.525 MHz (Brisbane only), regional VHF/UHF repeaters at 0900 hrs Sunday. Repeated on 3.605 MHz SSB & 147.000 MHz FM, regional VHF/UHF repeaters at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) (G) (S) (X)	$74.00 $60.00 $46.00
VK5	South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone 08 8352 3428 Fax 08 8264 0463	President Secretary Treasurer Web: http://www.vk5wia.ampr.org/	Ian Hunt Graham Wiseman Joe Burford	VK5QX VK5EU VK5UJ	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. 3.585 MHz and 146.675 MHZ FM Adelaide, 1930 hrs Monday.	(F) (G) (S) (X)	$75.00 $61.00 $47.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone 09 351 8873	President Secretary Treasurer Web: http://www.faroc.com.au/~vk6wia	Wally Howse Christine Bastin Bruce Hedland-Thomas	VK6KZ VK6ZLZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.825, 3.560, 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.350(R) Busselton and 146.900(R) Mt William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday, relayed on 1.865, 3.563 and 438.525 MHz; country relays on 146.350 and 146.900 MHz.	(F) (G) (S) (X)	$62.00 $50.00 $34.00
VK7	Tasmanian Division PO Box 271 Riverside TAS 7250 Phone 03 6327 2096 Fax 03 6327 1738	President Secretary Treasurer	Ron Churcher Barry Hill Mike Jenner	VK7RN VK7BE VK7FB	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart) Repeated Tues 3.590 at 1930 hrs.	(F) (G) (S) (X)	$74.00 $60.00 $46.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).						

Note: All times are local. All frequencies MHz.

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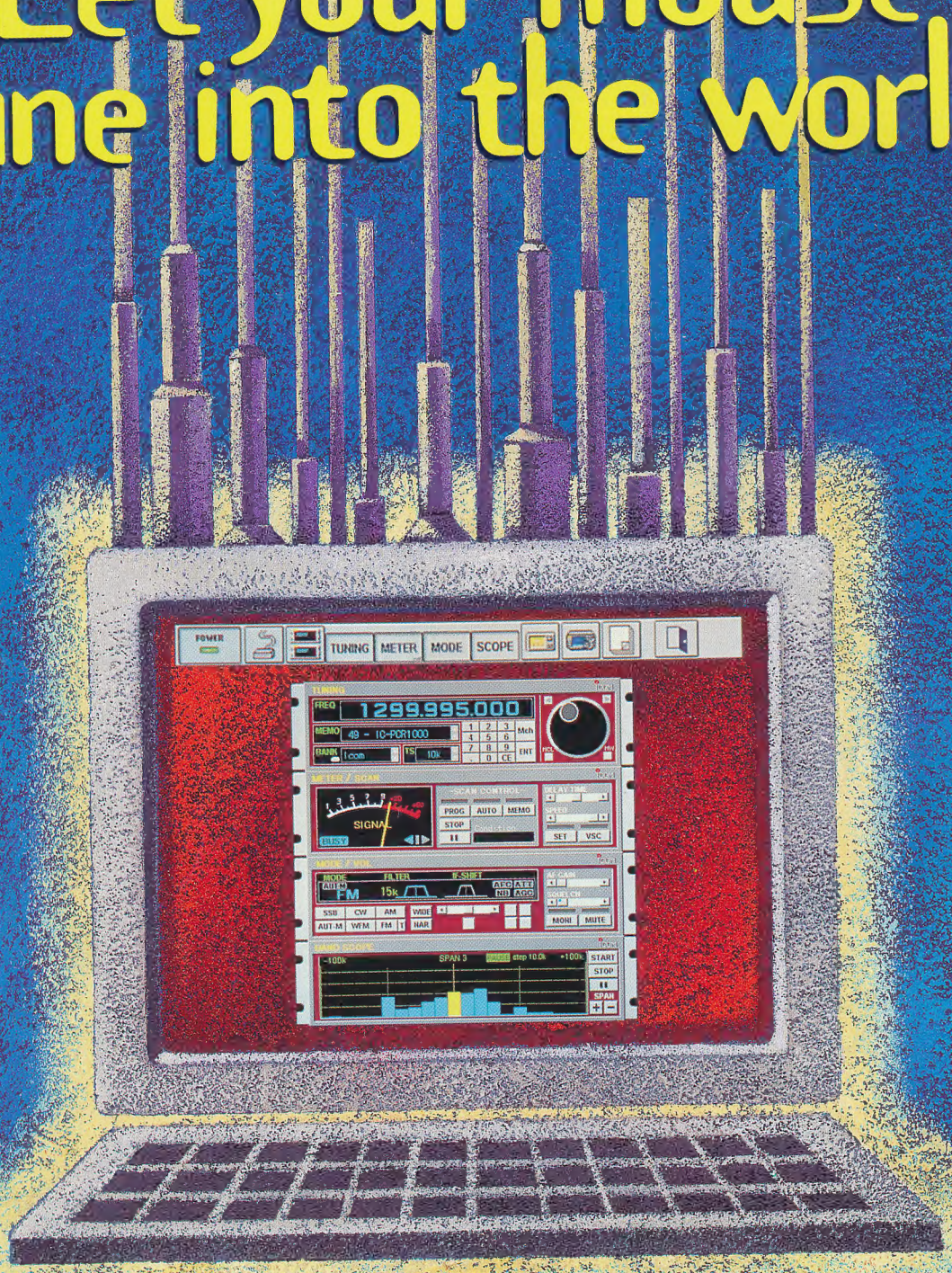

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